OCTOBER 12, 1953

NEWS ISSUE

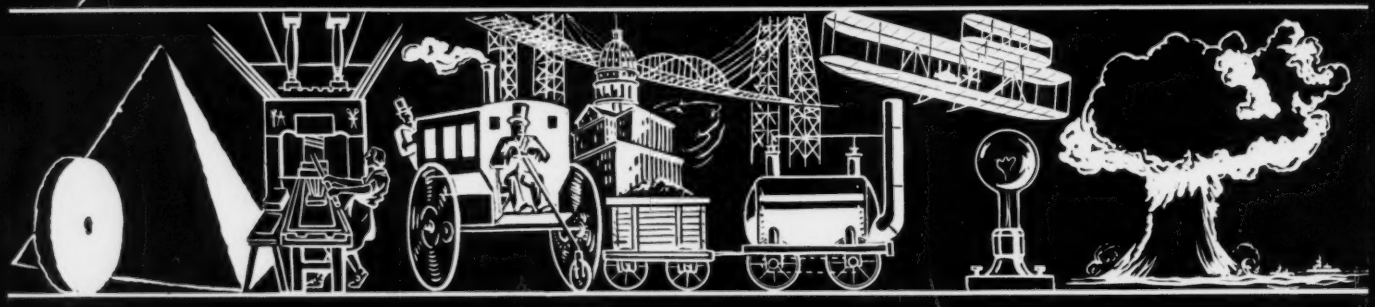
Electrical World

Price 35 Cents

A McGRAW-HILL PUBLICATION

'The Romance Of Engineering'

In Boston a professional society is broadcasting a dramatic series on scientific progress through the ages. The aim: To recruit new talent for technical careers



See page 16

Is Fluorescent Street Lighting Here to Stay?

VIRTUALLY GLARE-FREE CHARACTERISTICS and ease of maintenance of the new G-E Form 206 fluorescent luminaire are here demonstrated to R. J. Swackhamer, Mgr. Sales (left) and F. D. Crowther, Mgr. Marketing by P. H. Houser, Development Engineer in the lighting display room at G-E's Lynn River Works.

Every major city in the United States will have an installation of fluorescent street lights by 1963. This prediction, made by R. J. Swackhamer, nationally-known street lighting authority of the General Electric Company, is supported by the fact that since their introduction in Detroit in 1950, more than 1000 fluorescent luminaires are already in use or on order in more than a score of communities throughout the country.

HIGHER EFFICIENCY

Experience in England and France further substantiates this prediction. Well over 100 installations have been made in England, while the French have about 6000 fluorescent lamps in Paris alone.

The higher efficiency, longer lamp life, lower maintenance and servicing expense of fluorescent street lighting more than offset their higher initial cost.

BUILD PUBLIC GOODWILL

The community benefits of fluorescent street lighting include greater "shopping magnetism" of the business districts, higher real estate values, increased night time safety and a bolstering of community pride. In addition, the public relations possibilities to the electric utility, inherent in good, modern street lighting are readily recognized.

The enthusiastic acceptance of present installations promises to make fluorescent street lighting a cornerstone of our present era of night living. General Electric Company, Schenectady 5, N. Y. 301-242

EXCELLENT ROADWAY "SEE-ABILITY"—even on wet pavements—because light is reflected as wide bands rather than concentrated spots due to the large globe area of fluorescent luminaires which provide uniform distribution of light.

MORE POWER TO AMERICA

GENERAL ELECTRIC

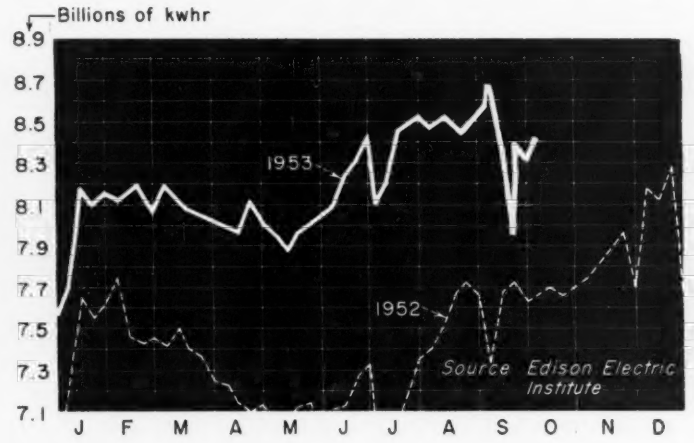
"SHOPPING MAGNETISM" provided by high-level light output and modern appearance of fluorescent luminaires is demonstrated below.

COMFORTABLE SEEING is provided by the low-brightness of fluorescent luminaires even where low mounting height is necessary—such as in the amusement park below (left) and the mile-long, high-speed viaduct (right). Tunnels and underpasses are ideal locations for fluorescents.

VOLUME 140, NO. 15

October 12, 1953

Electrical World



Output Week Ended Oct. 3—8,414,452,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Oct. 3	+9.8	+5.7	+4.5	+4.3	+8.7	+20.1	+15.4	+7.5	+25.6	+3.8
Sept. 26	+9.6	+7.1	+3.8	+4.9	+7.6	+20.8	+9.0	+9.5	+23.5	+5.5
Sept. 19	+8.7	+4.9	+1.1	+3.2	+8.1	+20.1	+5.5	+11.0	+23.1	+11.3

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	July	76.6	76.0	67.2
Capacity (Million Kw)	July	86.13	85.06	77.96
Production (Billion Kwhr)	Aug.	38.50	38.03	34.36
Hydro	Aug.	8.45	8.75	8.52
Fuel	Aug.	30.04	29.28	25.84
Fuel Consumption				
Coal (Million Tons)	Aug.	9.70	9.59	8.58
Oil (Million Barrels)	Aug.	6.55	6.35	5.37
Gas (Billion Cu Ft)	Aug.	112.88	109.35	105.40
Sales (Billion Kwhr)	July	32.13	31.77	27.70
Residential	July	8.47	8.37	7.50
Commercial	July	5.81	5.46	5.30
Industrial	July	15.50	15.80	12.64
Other	July	2.35	2.14	2.25
Net Income Class A & B Companies ($ Million)	July	73.61*	77.81	63.02
Estimated Dec. '53 Peak (Million Kw)	July	86.2	86.2	88.3
Kwhr per Residential Customer (12 Month Average)	June	2,257	2,241	2,091
Revenue per Kwhr Residential Service (12 Month Average)	June	2.76¢	2.76¢	2.78¢
Canadian Production (Billion Kwhr)	July	5.18	5.26	4.84

Business Statistics

FRB Industrial Production Index†††	Aug.	239*	234**	218
Gross National Product Annual Rate ($ Billion)	2nd Qtr.	372.4	362.0	345.1
EW 5 Industry Production Index	Aug.	130.3	130.0	120.5
ENR Construction Cost Index††	Aug.	128.3	126.6	122.7
BLS Consumer's Price Index	Aug.	115.0	114.7	114.3
NEMA Insulation Materials Sales Index†	July	150	174	123
NEMA Electric Appliance Sales Index†	July	86	105	100
NEMA Household Refrig. Sales Index†	July	87	88	100

*Preliminary **Revised †1947-49=100 ††1949=100 †††Unadjusted

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Westinghouse Microwave Letter

WESTINGHOUSE ELECTRIC CORPORATION, ELECTRONICS DIVISION, 2519 WILKENS AVE., BALTO. 3, MD.

30 Independent Channels Give Maximum Communications Capacity . . . Reliability

Many critical communications and control requirements are solved by microwave—the newest complete system of communications. When you compare the practical advantages of presently available microwave systems, consider these facts about the new Westinghouse 2000 MC Microwave.

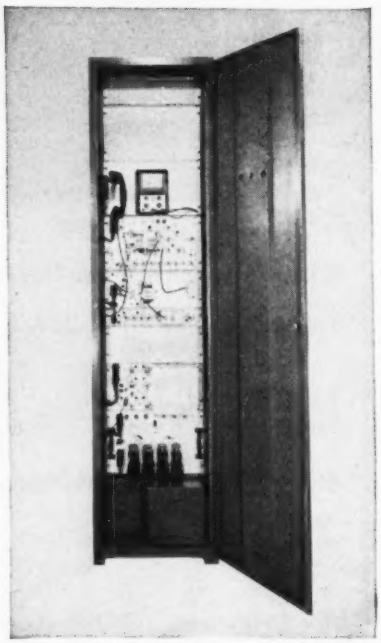
This Westinghouse system is based on (1) an extensive field and laboratory study of user requirements, and (2) years of valuable manufacturing and application experience with all types of end-use equipment. Selection of the 2000 MC band is one important result. This band provides more capacity than lower frequencies . . . gives less fading than higher frequencies.

Another important result is capacity: Westinghouse 2000 MC Microwave supplies 30 voice channels—more than enough for most present needs and capable of accommodating future needs. An independent 31st channel supplies service communications.

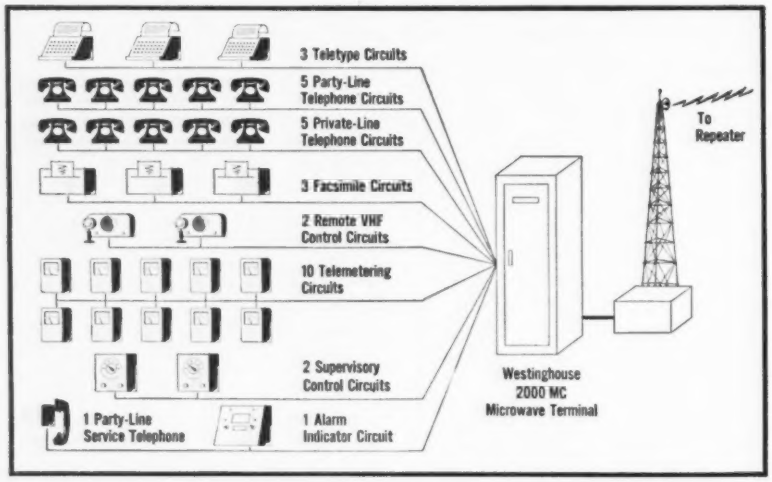
Each of these 30 voice channels can handle up to 15 telegraphic circuits. At full telegraphic capacity, 450 circuits are available for teletype, telemetering, VHF control, supervisory control, relaying, load control, and other functions. See illustration below for a typical arrangement.

These functions of Westinghouse microwave are based on a simple, flexible system of utmost reliability. Its two streamlined assemblies – Type FR Microwave Radio (illustrated) and Type FJ Multiplexing Equipment – have only four basic units each. Type FR Radio units can be assembled as either terminal or repeater stations. Type FJ Multiplex panels are entirely self-contained . . . each panel is provided with an individual power supply . . . and for high multiplex channel stability each channel has individual crystal control.

Strict channel independence like this means multiplexing reliability. If one channel develops a fault, all other channels continue to operate without interruption. That's why Westinghouse multiplex equipment, using frequency division, is your greatest guarantee of service continuity.



Westinghouse Type FR Microwave Radio assembly. Service channel and alarm panel are included for safe, efficient operation.



One of the many combinations of services that can be operated simultaneously over one microwave radio beam in Westinghouse 2000 MC Microwave radio.

Westinghouse has called upon its years of practical experience in microwave communications to suggest other beneficial design features for the new 2000 MC equipment. Call your Westinghouse representative or write: Westinghouse Electric Corporation, Electronics Division, Microwave Section, 2519 Wilkens Ave., Baltimore 3, Maryland.

Ask for our Microwave Booklet.

YOU CAN BE SURE...IF IT'S Westinghouse

J-02274

THE ELECTRICAL WEEK

The Issue's News Highlights—Federal government has disclosed its first proposals for industrial mobilization in event of a bombing attack . . . Hells Canyon hearings resume before FPC.

TVA's Gordon Clapp charges benefits utilities get from fast tax write-offs represent a federal "subsidy" . . . Major General Nichols is named AEC general manager.

USBR is offering about 170,000 kw of power for sale from Missouri Basin projects in '54 . . . EW's editor, Fischer Black, tells SEE outlook for utilities is good.

Appointment of California's Gov Earl Warren as Chief Justice of the United States may foreshadow change in the state's official position in power development. Warren's successor, Goodwin J. Knight, also a Republican, is far more conservative. He's believed to be more favorably inclined to private development of power resources of the state, and is expected to favor state, rather than federal, ownership of USBR's Central Valley Project.

Falcon Dam astride the Rio Grande will be dedicated jointly Oct. 19 by President Eisenhower and President Ruiz Cortines of Mexico. In his first trip outside the U. S. since taking office, Eisenhower will cross the river to Nuevo Gueriro to witness the ceremony.

Assured by Reclamation Bureau of adequate power supply from the Eklutna Power Project now under construction, City Council of Anchorage, Alaska, has cancelled a contract for construction of its own $3-million steam plant.

Arkansas PSC has prohibited interlocking directorships among public utilities, bond and underwriting firms and utility supply companies. Exception may be granted if utility can show "interlock" would benefit public.

Interior Secretary McKay has dispelled all doubt about the way the new Administration looks on the activities of the New York-New England Inter-Agency Committee. He told a convocation at the University of Maine: "The purpose of the . . . Committee is not to develop a plan which can be used as a basis for a large-scale federal power program for New England and New York, whatever may have been the previous objectives."

Lateral contention wall of the new Uspa-Uspa hydro plant in Cochabamba, Bolivia, burst during tests—inrushing water destroyed 70% of the machinery, valued at $200,000. Reason: Engineering firm had built wall on only 21 inches of groundwork.

Corps of Engineers has put a fiscal expenditure ceiling on The Dalles Dam on the Columbia at $26,375,000—enough to keep project on schedule calling for initial power in 1957.

On the line in October: Third 100,000-kw unit at Niagara Mohawk's Albany Plant. Fourth and last is under construction . . . First 31,000-kw unit at Florida Power Corp's Suwannee River Plant. Second will be ready next year . . . Second 100,000 kw unit at Walter C. Beckjord Station of Cincinnati Gas & Electric. Unit No. 3 will generate 125,000 kw.

Off the Washington Wire—Supreme Court is scheduled to hear arguments in the Niagara Mohawk-FPC case over water-use rights. At issue is whether state-granted rights remain valid once FPC grants a license to override them.

Use of Navy mobile generating units will make it possible for power customers in southern New Mexico to obtain continuous service while Bureau of Reclamation installs overhead ground wire on its Las Cruces-Alamogordo transmission line early next year. Community Public Service is cooperating to assure a constant flow of power to important military installations as well as other customers.

William H. Timbers, a Darien, Conn., lawyer, is new general counsel at Securities and Exchange Commission, succeeding Roger S. Foster.

Sacramento Municipal Utility District has granted its employees in construction and maintenance a 4¼% wage increase and other personnel a 3½% hike . . . Pennsylvania P&L and Employees Independent Association, bargaining agent for PP&L non-supervisory employees, has agreed to 8¢-an-hour wage increase. If all fringe benefits granted are added to the wage hike, the total package would total about 12.2¢ an hour.

Sen. Hubert H. Humphrey, D-Minn., has accused Eisenhower administration of "packing" the NLRB. Said Humphrey: "If the Republicans won't go through the legislative motions of toughening Taft-Hartley against unions, then they will achieve the same goal by packing the board with anti-union members and interpreting out of existence whatever protections for unions Taft-Hartley carried over from the Wagner Act."

Atlantic City Electric Pres B. L. England says "Earnings will have to go up because the company during 1953-54 will spend $31.5 million on new plant and construction," as compared to $27.5 million previously planned. He declares that "This will be the largest two years' construction in the history of the utility and will almost equal the expenditures for the first 40 years of the firm, which totaled approximately $40 million."

After a nine-month investigation, Pennsylvania PUC denies entire $1,179,000 annual rate hike sought by Scranton Electric. PUC finds utility is earning a fair return under present rates on basis of operations for year ended Dec. 31, 1952 . . . Illinois Commerce Commission authorizes Iowa-Illinois G&E to raise rates $357,000 annually . . . Mexican Tariff Commission allows an 8% return on investment of Mexican L&P.

Congratulations—Tax Executive Institute elects Herbert E. Blachford, tax law supervisor of Detroit Edison, vice president . . . New York State Board of Examiners for Professional Engineers and Land Surveyors appoints Dr James F. Fairman, Consolidated Edison vice president, as a member . . . Robin S. Kersh, vice president and manager of Northeastern region of Westinghouse Electric, receives Westinghouse Order of Merit, highest company award.

(Continued on page 10)

ODM Plans for Bomb Attack on Industry

• Federal agency urges protective construction to lessen damage to electric facilities in event of raids and to hasten rehabilitation

• Power expansion is listed with steel and aluminum as major national goals, although ODM says capacity additions are proceeding satisfactorily

• Plans are drafted for reimposition of material distribution and production controls which would take effect immediately in emergency

The federal government has disclosed its first generalized recommendations for industrial mobilization and civilian defense under threat of a hydrogen bomb attack.

Tentative proposals for reducing damage and speeding rehabilitation in event of such an attack came in the first report issued by the Office of Defense Mobilization since it was determined that Russia has the know-how to produce hydrogen bombs.

Effect on Power Industry

Admittedly still in a formative stage, the broad scope plans would affect the electric power industry in at least three ways. The ODM report calls for:

- Protective plans to lessen damage to electric facilities in event of attack and hasten rehabilitation.
- Sufficient generating capacity to carry partial or all-out mobilization.
- A system of quickly enforceable material controls which would permit power expansion for mobilization or rehabilitation.

Little new has been worked into the plans for protection and rehabilitation except a sense of urgency and a skeleton organization.

Basic tenets of this plan are still dispersal and protective construction adapted to the particular facility in question.

Department of Commerce, assisted by other agencies, has completed two-thirds of the basic job of identifying the products, services, and facilities most essential in time of war. It has selected 80,000 of the more than 300,000 facilities in the United States for detailed study. Priority attention is to be given to approximately 3,500 of the most highly rated facilities.

The department, working with industry advisory committees, will then set out to develop measures "tailor-made" to meet each industry situation.

In prime target areas, consideration is being given to protective construction which ODM believes can reduce the area of major damage by one-third. Costs of protective construction for general industrial plants is estimated to be some 20% more than ordinary construction, but ODM says the additional security is of great importance to plants which must remain within a target area.

A program which makes the cost of protective construction in both new and existing plants eligible for 100% rapid tax amortization has been initiated to encourage this type of defense. But it was not clear last week whether electric generating facilities might qualify. For all practical purposes, generation expansion goals have been filled. On the face of it, this may preclude any such facilities from eligibility for further tax amortization benefits.

Rehabilitation

Previous attempts to work out rapid rehabilitation plans for bomb-damaged electric facilities have never been very productive. Consensus among electric company officials is that individual companies already have plans for meeting such natural disasters as flood, hurricanes, and tornadoes. Such plans, they argue, are easily adaptable to rehabilitating plants and facilities knocked out of service by bombing attacks.

Electric generating capacity sufficient to meet minimum mobilization requirements is already scheduled, and ODM says this expansion of power facilities is coming along at a "satisfactory rate."

However, it says there are areas of the country that will have inadequate reserves until presently scheduled capacity additions are completed. Capacity of all electric utilities is expected to reach 92 million kw by December of this year. This compares with 63 million kw in 1950 and a 1955 goal of 116 million kw.

Expansion of electric power facilities is listed along with steel and aluminum in the report as a major national goal.

Controls

At the same time that it has been presiding over decontrol of material distribution and production, ODM has also been drawing up proposals for reinstituting such controls in the event of an emergency.

Aim has been to devise a plan of controls which would be made immediately effective and enforceable. Experience in World War II and the Korean war indicates that the task has required almost a year in each case.

ODM points out that there is wide agreement that a production control system only can be imposed rapidly if there is a continuing flow of necessary statistical information from industry to provide the basis for initial allocations and other control actions.

What appears to be in prospect is a skeleton peace-time organization to gather this information. Supposedly this would allow controls to be imposed immediately and also reduce the burden of detailed industry reporting and control in event of war.

Plans are already under way for putting draft proposals for such a control system before representatives of industry in the early part of next year.

Hells Canyon Hearings Open

Idaho Power Co witnesses undergo cross-examination by FPC staff attorney and lawyers for opponents of three-dam plan

Cross-examination of Idaho Power Co witnesses is scheduled to continue this week at Federal Power Commission hearings on development of the Hells Canyon site in Idaho.

Second phase of the Washington hearings got under way last week after an eight-week recess. E. A. Woodhead, chief consulting engineer for Idaho Power, faced questioning on his earlier direct testimony regarding design and cost of the three-dam plan for the $133-million hydroelectric project.

Woodhead testified that new investigations have shown there are ample soils of suitable quality for compacting earth cores for the three dams.

14 Witnesses to Be Examined . . . The chief consulting engineer was the first of 14 company witnesses offered for cross-examination. Staff Attorney John Mason of FPC lead the questioning with attorneys for the National Hells Canyon Association scheduled to follow him as each company witness took the stand.

NHCA, chief opponent to the company plan, let up on its drive for delaying the hearings. In a brief statement read at the hearings last week, NHCA Counsel C. Girard Davidson said he hoped to participate more fully in the proceedings.

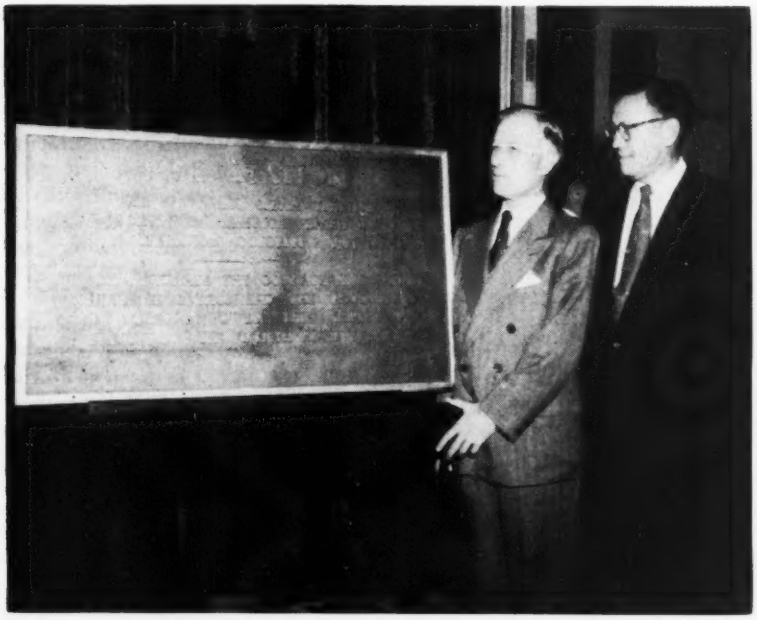
He indicated he was prepared for the cross-examination of company witnesses, but was uncertain as to the other phases of the hearing.

Following cross-examination of the company witnesses, FPC staff proposes to present testimony of Bureau of Reclamation experts on several technical phases of the development. Under former Democratic Administrations, the bureau had proposed one high dam at the Hells Canyon site.

Then will come witnesses for NHCA and finally staff witnesses for Federal Power Commission.

Idaho Plan Criticized . . . James G. Patton, president of the National Farmers Union, inserted a statement in the record charging that the Idaho Power plan would "foreclose forever the possibility of full development of the water power resources of this great site." He said the proposed high federal dam would mean power at half the cost.

Testimony still to be presented will take an estimated four to six weeks, but may extend over a longer time if further recesses are granted.



Commemorating a 'Giant' Unit of 1903

Plaque commemorating 50th anniversary of the placing in service of the first 5,000-kw steam turbine generator at Commonwealth Edison's Fisk Station is inspected by Ralph J. Cordiner, left, president of General Electric Co, and Willis Gale, Commonwealth Edison president. GE built the generator which was considered a "giant" in its day. The unit is now enshrined at Schenectady.

Cordiner, guest speaker at the anniversary luncheon attended by 1,200 business and civic leaders, declared that within ten years utilities will be forced to double their generating capacity. He said that the industry should be planning for its most active and prosperous decade. The GE president stated that a depression need not be considered inevitable and added that prosperity can be continued through consumers' spending of dollars made available by tax cuts, construction of needed public projects, and long-range business planning.

Programs for 4 New Dams on Brazos River Studied

Brazos River Authority, an agency of Texas with headquarters in Mineral Wells, Tex., is studying a program involving construction of four new dams on the Brazos River between Morris Sheppard Dam and Whitney Dam. The plan also includes increasing reservoir capacity at Morris Sheppard Dam and construction of an off-channel storage reservoir on the lower Brazos River west of Houston.

The four dams would be built at Turkey Creek, Inspiration Point, De Cordova Bend, and Bee Mountain. Total capacity of the facilities, including an additional unit to be installed at Morris Sheppard Dam, would be about 200,000 kw. The contemplated power installations at the main river dams would be partly in the form of conventional turbines and partly in the form of reversible turbines which can be used for off-peak pumping of water back into the reservoir at times of deficient stream flow.

Clapp Hits Back

TVA chairman charges fast tax write-offs are giving private utilities a federal 'subsidy'

Gordon R. Clapp, chairman of Tennessee Valley Authority, in a speech before Memphis Kiwanis Club Sept. 30, hit back at critics of TVA. He charged that private utilities are getting a "subsidy" from the federal government in the form of rapid tax amortization. And he labeled as a "smear" efforts of private power interests to spread the notion that consumers of TVA power are receiving a "federal handout."

Clapp's speech was his first since President Eisenhower seven months ago cited TVA as an example of "creeping socialism."

Tax Savings Called 'Subsidy' . . . In his attack on utilities, the TVA chairman pointed out that $1.8 billion of a total cost of $3.9 billion for new power projects has been certified for rapid tax amortization. "It means," he said, "that private utilities are granted tax savings in the initial five years totalling $770 million as an interest-free loan from the federal government." If the earnings from this sum, Clapp noted, are taken out as dividends "the stockholders get a windfall of some $700 million" at the expense of federal taxpayers.

In addressing the Memphis audience, Clapp declared, "Those who loosely throw the label of 'subsidy' at you, the electric consumers served by your city and TVA, ought to talk more candidly about their own sources of funds."

Criticizes Moses' Statement . . . The authority chairman also criticized statements by C. Hamilton Moses, chairman of the board of Arkansas Power & Light Co, that TVA wholesale rates were too low and represented an "alien philosophy."

TVA rates to cooperatives are one-hundredth of a cent less than the Arkansas Power & Light rate, he pointed out. "Apparently you and I are expected to believe it is one-hundredth of a cent that makes the TVA rate an example of an 'alien philosophy'," Clapp commented.

Says TVA Pays Its Way . . . In defense of TVA, Clapp maintained that TVA power has paid its own way, that revenues cover all costs and provide a substantial return on the power investment, and that federal funds invested in the system are being repaid to the federal government ahead of schedule.

And, the TVA chairman added, "If the region has been strengthened and made more prosperous and productive from the wiser use of its natural resources, then clearly the whole nation has gained."

MAJ GEN K. D. NICHOLS

. . . AEC Manager

Maj Gen Kenneth D. Nichols, wartime district engineer for the Manhattan District, takes over as general manager for the Atomic Energy Commission Nov. 1.

In this position he has general supervision over all of the construction carried on by AEC as well as the research, development, and electric power supply.

Nichols succeeds Marion W. Boyer.

The incoming AEC general manager will retire from the Army to assume the civilian post. He is presently on duty in Washington as Chief of Research and Development, U. S. Army. General Nichols was a pioneer among military men engaged in atomic energy development. He has held key positions in research and development activities, construction of plants, production activities, weapons manufacture, and military application of atomic energy along with military planning and weapons development.

Power for Sale

Reclamation accepting applications for purchase of 170,000 kw of firm energy from Missouri

Bureau of Reclamation is offering approximately 170,000 kw of firm power for sale from the Eastern and Western Divisions of its Missouri Basin River Project in 1954.

Applications for purchase of this power must be filed with Reclamation regional offices before Jan. 1 of next year, and the marketing is to be in accordance with criteria recently approved by the Department of Interior (EW, Sept. 28, p 7).

Negotiation to Start Jan. 1 . . . Negotiations will be commenced by the bureau on Jan. 1 for the contracts with prospective customers. Under law, preference in the purchase of this federally produced power goes to public bodies and cooperatives. Any remaining power will be available on equal terms to non-preference customers. It is not expected that customers will desire to contract for power beyond their requirements in the next two years since revision of rate schedules will require payment for power contracted for but not used.

Of the total power to be made available during next year, approximately 115,000 kw will come from the Western Division of the project. Of this, 104,750 kw is to come from the Pole Hill and Flatiron power plants in Colorado which are scheduled for completion in early 1954. This power is to be marketed in an area comprising parts of Wyoming and Nebraska and all of Colorado.

Eastern Division Power . . . Eastern Division of the project will offer approximately 55,000 kw of firm power for sale in 1954. About 85,000 kw more will be available in 1955 and an additional 70,000 kw in 1956. The power for 1954 will come from the Canyon Ferry and Fort Randall projects. The Garrison Dam will bring in additional power in 1955 and the Gavins Point plant in 1956. Marketing area for this power lies in parts of Minnesota, Iowa, and Nebraska.

Transmission limitations, including wheeling, may prevent the power from being equally available in all parts of the marketing area, Interior officials said.

SEE Told Outlook for Utilities Is Good

• Fischer Black says prospects of electric companies are bright despite expected downturn for general business in 1954–5

• Latest developments in breaker design, use of new equipment among topics discussed at Pinehurst meeting

Short and long-term outlook for the nation's electric utilities and the electrical industry are good in spite of an expected downward adjustment of general business in 1954 and 1955, Fischer S. Black, editor of Electrical World, told members of the Southeastern Electric Exchange engineering and operating committees at Pinehurst, N. C., recently.

For 1953 electrical production is expected to reach a record level of 443 billion kwhr, he said, with peak loads up 9 to 10 million kw and 9.5 million of new capacity added to systems. He noted that during the year all agencies of the industry would spend about $4.2 billion for capital additions.

Output Will Double . . . In the next ten years, Black predicted, this year's energy production will be doubled, peak load will climb from 82 to 162 million kw, capacity rise from 91 to 198 million kw and annual capital expenditures by utilities alone mount from $4.2 billion to $6.4 billion, totalling $50 billion for the ten-year period.

Prospects for the electrical manufacturing industry are equally bright, EW's editor declared. By 1963 this industry and the electric utilities will account for $30 billion of an expected gross national product of $435 billion compared with a predicted $365 billion this year, he said. Moreover, by 1963, the average residential consumer will be spending 4.3% of his income for electrical service, and purchase of new appliances and equipment, Black foresaw.

To meet it's share of predicted future loads in the Piedmont Carolinas, Duke Power Co is planning substantial additions to its transmission and generation facilities, according to O. L. Giersch, system planning engineer. Most attractive of several plans being studied, he said, contemplates opening a new million-kw steam station in the Virginia coal fields and extending three double-circuit 230-kv lines southward fan-wise from the plant to load centers in three of the company's four divisions. With early completion of the 230-kv lines, units of 200 Mw in the proposed plant would permit late development of other area plant sites in fringe sections. This plan, although having higher first cost and excessive fixed charges and losses affords a lower total annual cost due to a 13% reduction in operating and maintenance expense, Giersch stated.

Breakers for High Voltage Systems . . . With some further development, the 25 million kva, 330-kv, 3-cycle multi-break interrupters being applied to ultra-high voltage systems today can be used in 500-kv breakers capable of handling future fault concentrations up to 30 or 40 million kva, J. B. McClure, manager of the Switchgear Division, Westinghouse Electric Corp, said. Such breakers will have 3-cycle opening time and 15-cycle reclosing, he added.

While breaker designs are advancing, reports indicate that experience with carrier relaying to date leaves something to be desired in reduction of false operations, longer tube life and less maintenance. This was the stand-out conclusion of a discussion led off by R. J. Cooper, Georgia Power Co. In the last six years, Duke Power has averaged 3.6 carrier trip outs for each case of trouble on its 71 terminals of carrier relaying. There were 1,867 operations including 305 incorrect ones. Of these, 51 were unexplained, 36 non-recurring. 72 recurring types excluding tube and 146 tube failures.

E. D. Early, Southern Services, described a new piece of equipment called the "Early Bird" which he devised to obtain the most economical loading of each generating source and unit as system conditions change from time to time. This equipment is expected to be in operation soon after the first of the year when the new Power Coordination Office of the Southern System opens.

(*Continued on page* 15)

SEE CONFERENCE CHAIRMAN J. M. Oliver, Georgia Power Co, left, chats with meetings' speakers (l to r) Fischer S. Black, editor of Electrical World; O. L. Giersch, Duke Power Co; Dr E. L. Harder, Westinghouse Electric Corp; and J. C. Richert, Jr, Carolina Power & Light Co

THE ELECTRICAL WEEK

CONTINUED

Carolina P&L receives approval from North Carolina PUC to sell its gas properties to the recently organized Tidewater Gas Co. Properties located at Fayettesville, Kinston, New Bern, Washington and Wilmington. Closing date for the sale is Oct. 22.

Combined production of electricity by utilities and industrial plants passed the 500 billion kwhr mark for the first time in history in the 12-month period ending Aug. 31, FPC reports.

Southern California Edison Co has obtained a federal license for an $8.5 million dam on Mono Creek in Fresno County, Calif. Company estimates operation of reservoir project will increase energy production at its downstream plants by 122 million kwhr a year . . . An FPC examiner has recommended granting a license to California Oregon Power Co for a 50,000-kw hydro project on Klamath River in Oregon.

Gulf States Utilities sells two idle plants (16,000-kw unit in Port Arthur and 9,000-kw unit in Orange) to Sampson Iron & Supply Co of Beaumont. Dismantled units will be offered for sale by Sampson to small municipalities or to industry, possibly in South America or Mexico. Price was not revealed.

Ohio Power offers $466,500 for electric system in Bluffton, Ohio, exclusive of present power plant buildings and grounds . . . Toledo Edison offers to buy municipal power plant at Genoa, Ohio, for about $120,000.

IN THE INDUSTRY

The Administration's "partnership principle" with regard to power development in the Pacific Northwest may be all right in theory, but in theory only. Bonneville Power Administration officials and BPA customers got together in Seattle on Sept. 29 to try out the principle. The consensus of those who attended the meeting seemed to be that the principle would be of no help to power development in the Northwest in the near future. They felt that such development would have to be carried out on an individual basis by cities, PUD's, other public organizations, and private power companies.

Interests Vary Too Much . . . Jack Rogers, speaking for the Columbia Interstate Compact Commission, admitted his organization was in the "floundering" stage and could not be a partner with anyone for years to come. None of the seven states involved has the same interests as the other six, he pointed out. And a decision has just been reached to consider the problem of power in the proposed compact. Rogers expressed the belief, however, that the commission would be helpful in the planning of such projects as Libby Dam, now held up by the International Joint Commission because it would flood Canadian soil.

Dr. Paul J. Raver, BPA administrator, found the need to be an "actual, practical partnership plan" setting up a legal vehicle for financing purposes and fixing the public utility responsibility. Unless such a plan is produced, he said, the present integrated program will break up; and each agency will be on its own. Financing of dams on the main stream of the Columbia River would be possible only if the existing federal equity could be drawn upon. Financing of all projects would be made easier if BPA were given the authority to buy power from non-federal projects for resale. This proposal drew general agreement.

Other Control Authorities Suggested . . . J. Frank Ward, superintendent of Tacoma City Light, pointed out that agreements between federal agencies, PUD's, cities, and states would have to be confined to contracts. Joint ownership is impossible. He spoke highly of the newly created Washington State Power Commission as the legal vehicle for partnership within the state, through the resale of power. He indicated that this organization could form partnerships with other state commissions.

One example of successful "partnership" was brought out by Jack Richardson of the Chelan County PUD. This is the enlargening of Puget Sound Power & Light Co's Rock Island Dam by the PUD so that the plant can furnish power to the Aluminum Co of America until BPA can supply it.

Eric Brundage, Seattle City Light, suggested the Port of New York Authority as a model for a four-state power authority that would harness the rivers of the Pacific Northwest.

And so the discussion went. Idea after idea by man after man. All the ideas were different. All were seeking a solution to the pressing need of a great region. All were agreed that the Northwest needs more power. Most were skeptical that "partnership principle" would supply that power. It is going to take many more meetings before the final answer can be given.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Bus regulation quality can be improved by grouping feeders of like characteristics on the same bus section.

Equal thermal aging of silicone insulation in nitrogen permits 50C higher temperature than for silicone operated in air under ventilated conditions.

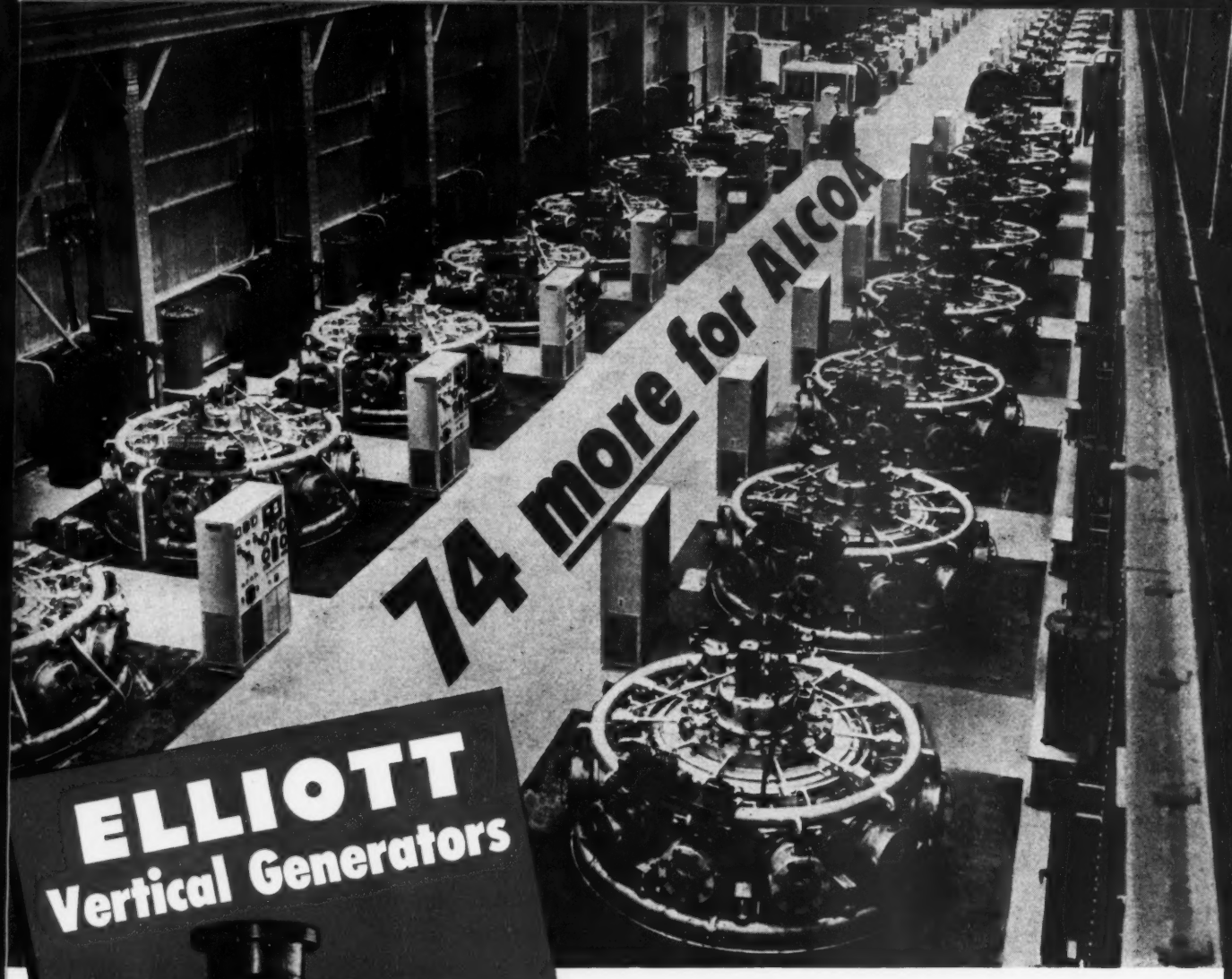
Field tests of capacitors can hardly be justified if the units or groups are so fused as to preclude service interruption in case a unit fails.

Coal that has high moisture and does not blow should permit omission of the enclosure of the coal gallery—unless ice is going to make climbing and walking hazardous.

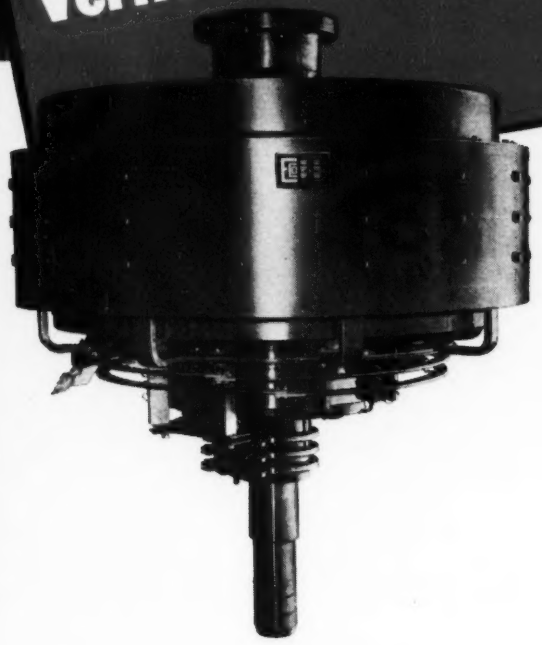
Steam-puff pulverized coal burned over a stoker is reported to have achieved boiler-rating upping to 400%.

Safety for underground system workers is promoted by use of an hydraulic spiking tool which is placed on a cable that is to be opened and then operated from outside the manhole.

Unbalance in voltage of relatively small magnitude (say 3½%) on polyphase induction motors will cause approximately 25% increase in temperature rise.



ELLIOTT
Vertical Generators



THE FIRST INSTALLATION of 120 vertical radial gas engine power units in the Point Comfort, Texas, plant of the Aluminum Company of America, included 40 Elliott vertical generators. An additional installation of 74 more units, recently completed, has Elliott generators throughout.

These latest generators are vertical 360-rpm units with a D-C rating of 1200 kw, 667 volts with additional take-off of 150 kva of 3-phase, 24-cycle, 425-volt A-C for engine auxiliaries. All engines are Nordberg vertical type.

It is naturally gratifying to Elliott engineers to have this endorsement of their successful participation in this outstanding power development.

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R2-23

HV Transmission Unlimited

Successful completion of a commercial type power transformer for a 600-kv transmission line gives the electric power industry a proved means for raising transmission voltages far beyond present levels.

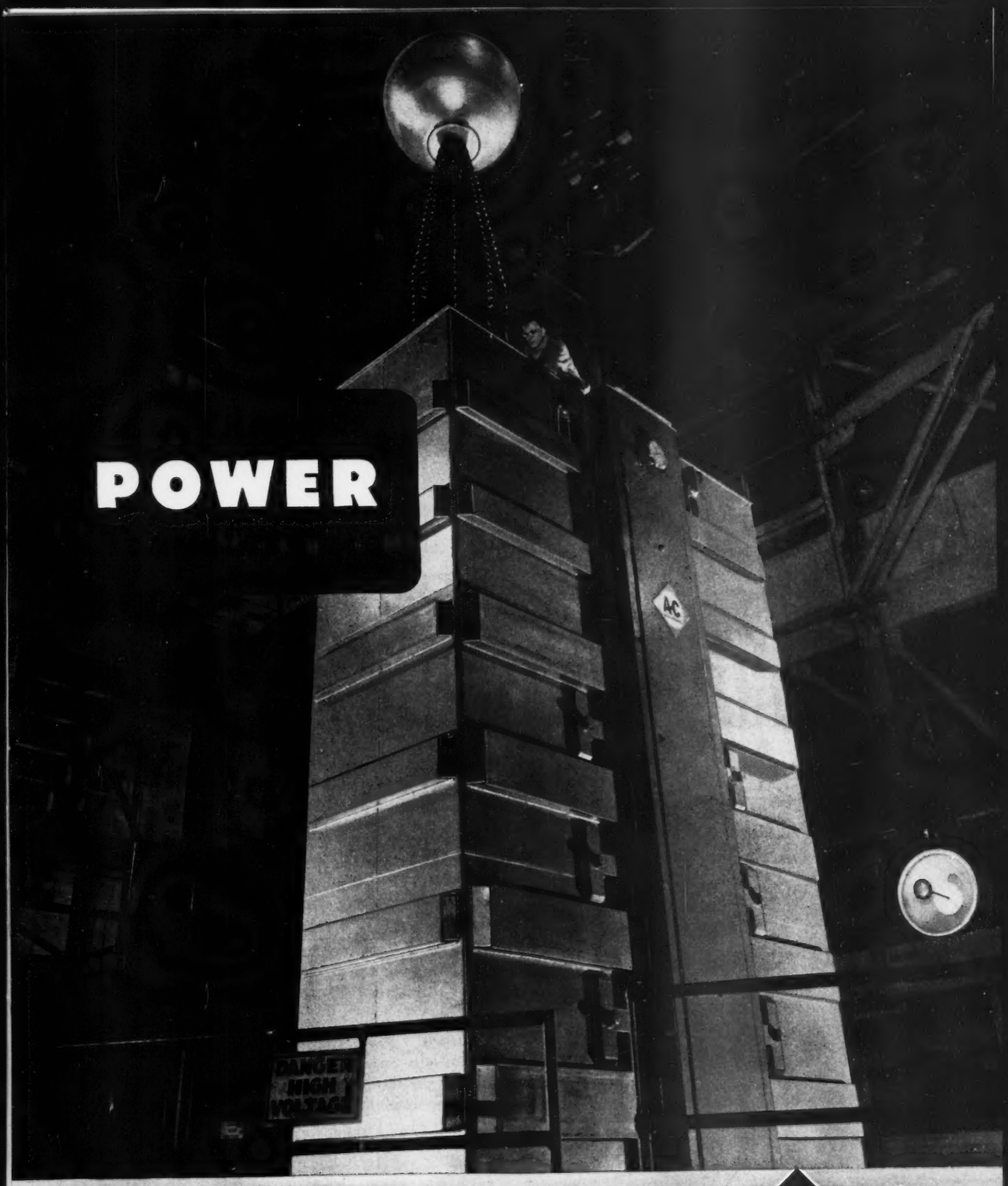
New insulation techniques developed at Allis-Chalmers are primarily what made the new unit possible. In addition, a special experimental bushing had to be designed and built by A-C engineers. Other notable features include use of the tank for clamping core and coils, very low oil requirement, and light weight in proportion to kva capacity.

It is a two-winding unit rated 5000 kva, single-phase, low voltage 2400/4800 volts, high voltage 600,000 volts to neutral. It was given impulse tests of 1600 kv full wave, 1850 kv chopped wave. It has sufficient strength to permit operation on a 600-kv solidly grounded transmission line with lightning arresters now available — possibly on an 880-kv transmission line in the future. And, like all Allis-Chalmers power transformers, the unit is Corona-Free.

The construction of this transformer has produced useful design and manufacturing experience. It will result in concrete advantages to buyers of Allis-Chalmers power transformers in all voltages. A-4178

Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-



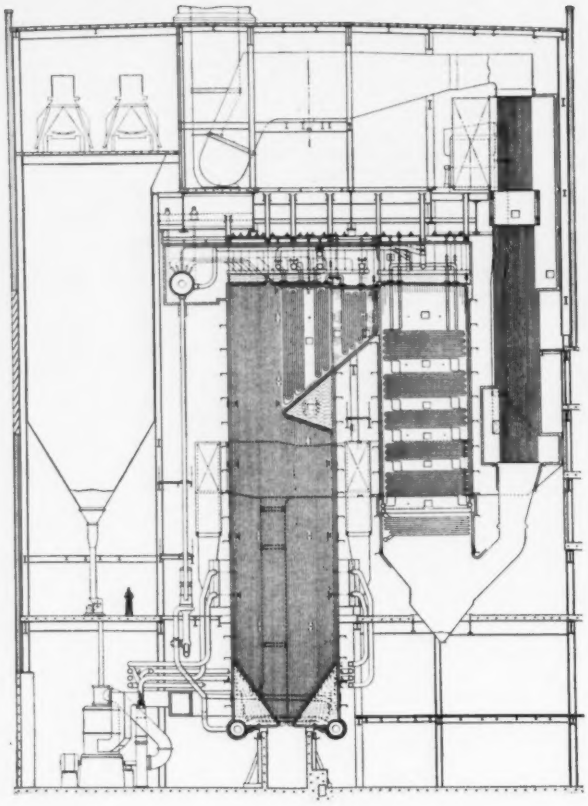
CHALMERS

A-C
ALLIS-CHALMERS

JOHN C. WEADOCK PLANT

Consumers Power Company

C-E controlled circulation boilers



The C-E Unit shown above is presently in process of fabrication for the John C. Weadock Plant of Consumers Power Company at Essexville, Michigan. Commonwealth Associates, Inc., are the Consulting Engineers.

It is designed to serve a 135,000 kw turbine-generator, operating at a throttle pressure of 2000 psi with a primary steam temperature of 1050 F, reheated to 1000 F.

The unit is of the controlled-circulation, radiant, reheat type with a divided furnace. The reheater surface is located between the primary and secondary superheater sections, and economizer surface is located below the rear superheater section. A tubular type air heater follows the economizer surface.

Pulverized coal firing is employed, using bowl mills and tilting, tangential burners.

B-700

C-E

COMBUSTION ENGINEERING, INC.

Combustion Engineering Building
200 Madison Avenue, New York 16, N. Y.

Southeastern Electric Exchange Meeting *(Continued from page 9)*

PARTICIPANTS at SEE meeting included W. T. Hess, Louisiana P&L, E. D. Early, Southern Services; Floyd Greene, Ohio Power; S. L. Muths, conference vice chairman, Mississippi Power

Less TV Interference . . . Distribution radio-TV influence problems have been solved in many instances through distribution designs using quiet or silent pin-type insulators, spool type insulated neutral supports, quality lightning arrestors, improved hardware and double coil spring lock washers, said P. F. Greene, Ohio Power Co. He said that a new low voltage post-type insulator was being designed for horizontal mounting with a solid clamp top.

The secondary underground network is the most economical system for load densities greater than 7,500 kva per square mile, according to R. O. Loomis and P. B. Boyd, Georgia Power Co.

They said that a commercial area with 4,000 hours use of demand would bring in $600,000 per year at a 2-cent rate.

Capacitors . . . Network capacitors can be profitably applied to secondary network systems to supply a portion of the reactive load at its source, in the opinion of N. M. Neagle and P. E. Hendrickson, General Electric Co. They said that capacitors release capacity in the thermally rated network equipment and reduce the voltage spread on the network grid. J. M. Parker, New Orleans Public Service Co, described an installation of 4,447 kvar of network capacitors in New Orleans. He said that power factor was increased from 79.5 to 82.6%, transformer bank voltage was increased 2.5% and 2,600 kva was released for additional load.

Advantages of Cyclone Burners . . . Savings in power station costs and reduced ash problems were cited as gains to be derived from use of cyclone burners by S. T. Mackenzie, Babcock & Wilcox Co. In analyzing the advantages of the cyclone burner, Mackenzie listed savings in ash disposal, use of coal from seven states, elimination of fly ash problem, saving in capital equipment for coal and ash handling, reduced maintenance cost, increased boiler efficiency, safety of operation, high availability, and low minimum load operation. Capital cost savings were given as from $2 to $8 per kw at 2,000 psi design pressure.

Increased station service power was given as one of the expenses partially offsetting the gain.

C. W. Elston, General Electric, described the new turbine designs including 200,000-kw cross-compound single-flow unit and the 4,500 psi, 120,000-kw Philo unit. He pointed out that the Philo design could give a 6% reduction in heat consumption on units of 250,000 kw or larger compared with the 2,350-psig Kearny unit.

Relative gains from the new 26 in. last stage buckets for 3,600 rpm machines and 43 in. buckets for 1,800 rpm machines were also presented.

Semi-Outdoor Plants . . . Carolina Power & Light Co's experience with maintaining semi-outdoor plants was analyzed by M. H. Long, maintenance supervisor for the company. He stated that about 80% of the time the weather remains clear and working conditions are favorable, and about 75% of the time working conditions are more pleasant than in an indoor plant. He emphasized the fact that good light and pleasant working conditions were substantially better for semi-outdoor plants. As far as the slow generating equipment is concerned, he believed maintenance to be much more easily performed than on an indoor unit.

Disadvantages, he said, arise from possible bad weather during emergency outages, additional paint requirements, need for anti-freeze protection, and more breeching and duct maintenance.

Minimizing Interruptions . . . Unscheduled interruptions in the operation of power plants were blamed primarily on poor inspection and maintenance by Martin W. Tall, Travelers Insurance Co. He recommended the inauguration of a preventative program including periodic inspection as well as records of all tests and operating data and a permanent operating, maintenance, and distribution personnel training program that includes a complete engineering analysis of all unscheduled interruptions.

Flexibility, continuity of service, and simplicity in operation are of utmost importance in the design of station service connections for steam plants according to M. J. Seale, Alabama Power Co. He paid particular attention to the disadvantages of solid ties from generators to power transformers. The use of twin step-up power transformers for the company's Gorgas No. 8 unit which provide an opportunity to return to generator breakers was described in some detail.

CO-AUTHORS RYAN AND WHITEHURST sat down to write radio script that would attract new talent to the engineering profession

The Engineers Try Radio Recruiting

"My father made me listen to your program. I liked it."

Bert Whitehurst and William Ryan, co-authors of a series of radio broadcasts in Boston called "The Romance of Engineering," consider that message, on a postcard, as the very best of their fan mail.

If the boy who wrote it liked their show, then they've succeeded in what they were trying to do: Recruit young men and women to the engineering profession and enhance the esteem in which engineers are held.

The series, begun this spring over one Boston station, will be continued in January over an 11-station network. Already the authors are into a second series, called "Engineering in Profile," being broadcast on another network, and making kinescopes to stage the show on television, too.

Script Engineers . . . The idea for the engineering broadcasts came to Whitehurst, of Stone & Webster Engineering Corp, as publicity chairman for Massachusetts Society of Professional Engineers. He enlisted the aid of Ryan, S&W vice president of engineering, with whom he had done a book, still in manuscript form, called "Philosophy of Engineering." Why not take the chapters, suggested Whitehurst, and use them on a radio show to trace the development of engineering from the seven wonders of the ancient world to the development of the electron microscope? Ryan, a past president of the Massachusetts society, thought it would be a fine idea:

"It would help clarify the distinction in the public's mind between a railroad engineer and a professional engineer," he commented.

They took the idea to MSPE, and the group agreed to sponsor the show. It was an indirect way to get more engineers to meet the qualifications to become registered by their states.

They convinced WEEI, an FM station, to program it as a public service. The studio had but one demand: The show must be dramatic.

"They don't want the listener to turn the dial to another station," says Whitehurst.

So he and Ryan made it dramatic. Best way to do that, they decided, was to write the script in the form of an interview, with a Girl Friday asking Whitehurst the questions.

They dug up some pretty interesting information in researching 183 books for the program. In the beginning of the script called "Electrons Rampant," for instance, Girl Friday asks what Aristotle meant when he wrote about a stone that "has a soul since it moves iron."

Whitehurst: He was talking about lodestone, or magnetite, as it's called today. Lodestones were first called magnets by

THEY TOOK SHOW on tape to chapters of Massachusetts Society of Professional Engineers to get their sponsorship for "recruiting" series

BOSTON STATION WEEI agreed to put show on, instructed authors on technique

FIRST RECORDING was made by Narrator Whitehurst and interviewer while manager looked on

13-WEEK SERIES drew a responsive audience. Professional society gave the station a citation for programming it "in the public interest"

Euripedes in 400 B. C., because the most powerful ones were found near Magnesia in Northern Greece. As late as the early 1600's, some thought these magnets were possessed of the devil. In fact, early mariners would not sail close by mountains containing lodestones for fear of drawing nails from the ships.

Girl Friday: But electricity as we know it today—how did it develop?

And the show takes off from there. When they wrote their scripts, Ryan and Whitehurst had trouble getting around the studio's injunction: "Don't use words of more than two syllables."

"How will we say 'engineering'?" Whitehurst asked.

The station's production manager, Arthur King, made a concession. "You can even use the word 'thermonuclear' if you want to, if you use two-syllable words to explain it."

The Massachusetts engineers kept their recruiting on a high plane. "We never mentioned the high starting salaries for engineers," Whitehurst commented. "We pitched the program to the service young men and women would be doing to mankind if they came into the field."

In fact, the authors never claim engineers have done anything first. But they do try to bring out the fact that without engineers, ideas of inventors and scientists would never have been reduced to practice for the benefit of mankind.

The Response . . . The first 13-week series drew 283 responses—letters, post cards, personal visits to the authors. Young men asked how they could become enrolled in engineering; many inquired about scholarships.

The S&W engineers were gratified —they decided to spread their message throughout New England, with the aid of professional societies in each state. The idea has interested others. National Society of Professional Engineers in Washington has asked that the scripts or tapes be made available for distribution to members societies all over the country. And the Ontario Association of Professional Engineers has asked permission to put the scripts on a national hookup in Canada.

It may help turn the shortage of engineers into a glut. But that won't worry the authors. "Country needs 'em," they say.

Relaying Problems Discussed

PEA committee told by Bryson that relay engineers must be heard when system expansion is planned

Relay engineers must be heard when system expansion is planned, said W. C. Bryson. For they know more about protection than most other engineers. Bryson, newly appointed chairman of Engineering Section for Pennsylvania Electric Association, was addressing recent meeting of PEA Relay Committee at Dallas, Pa.

Modern relaying has greatly reduced outages and burndowns to improve service reliability, Bryson continued. But supervisory indication may be needed to supplement relays in automatic substations.

Committee Named . . . Movement toward clarification of relay practices and nomenclature was disclosed by the appointment of a standardization subcommittee. But close cooperation with American Institute of Electrical Engineers committees was specified by J. E. Lange, chairman of the Relay Committee.

Much confusion derives from attempts to show more by the vector diagram than it is capable of showing, said W. K. Sonnemann of Westinghouse Electric Corp. He urged that a circuit diagram be added to present functions which are not properly part of the vector diagram.

The versatility of modern protection was exemplified in the use of one seven-conductor control cable to provide both oil alarm indication and protective relaying on three 66-kv cables. The solution, presented by J. R. Linders, Cleveland Electric Illuminating Co, provided only one conventional two-wire relay circuit. The second relay circuit was between the one remaining wire and a phantom on the two-wire circuit. Dc relaying superposed on this circuit provided the third link.

Relaying Installation Described . . . Audio tones transmitted between line terminals over a telephone pair were the basis for a relaying installation described by O. L. Shorter, Jr. of Delaware Power & Light Co.

And control cable itself was reported subject to attack by microorganisms. Resistance tests should be supplemented by power-factor check to detect such inroads, advised W. F. Dunkle, Pennsylvania Power & Light Co.

First zone setting of distance relays should entail no coordination difficulty with devices beyond, said W. W. Valentine, Potomac Electric Power Co. But some form of overcurrent backup may be required to protect against faults so close that voltage fails to actuate directional elements. Second and third zone settings require more investigation, he said.

California USBR Office Reorganized by Spencer

Reorganization of the Bureau of Reclamation's former Region II office in Sacramento, Calif., has been completed by Clyde H. Spencer, former construction engineer in charge of the Hungry Horse Dam project in Montana for the bureau.

Spencer, appointed to succeed Richard L. Boke, who is not an engineer, put many changes into effect including the abolishment of several district offices and consolidation of functions. (EW, July 20, p 20.)

The major change was the elimination of five major divisions, including the power branch headed by Oliver Rands, who lost his job.

One of the men rising in importance as a result of the shakeup is Martin H. Blote. Formerly superintendent of the Central Valley Project, Blote was given the position of heading the operation and maintenance division. The power branch was absorbed by this division.

A. Norman Murray was appointed by Spencer to head the planning division; William J. McCrystle was named chief of the engineering and construction division.

Robert S. Calland, who was assistant regional director, assumed the title of assistant supervising engineer under Spencer, who bears the title of supervising engineer, California Projects Office.

Spencer took over July 1 with orders from Secretary of the Interior Douglas McKay to slash the payroll to 1,675.

8 cell cooling tower driven by 8 Wagner Multi-speed Motors.

to get more power from steam

This 8 cell Marley Cooling Tower at a steam power plant in Pueblo, Colorado, cools 6600 gallons of water per minute—from 95° F to 80° F, at a wet bulb temperature of 65° F. This constant supply of cooling water lowers steam pressure beyond the turbine to give more kilowatts per lb. of steam.

There are 8 fans with blades 22 feet in diameter, that are driven through gear reducers by 8 Wagner two speed totally-enclosed fan-cooled motors. These 440 volt motors are each rated 75/19 hp.

Cooling towers need motors with plenty of stamina. They must operate without attention, day in and day out, completely exposed to all kinds of weather.

This exacting application is one of many where specialized requirements are met from the complete line of Wagner standard motors.

Whatever your requirements may be—there is a Wagner Motor to fit every need—a complete line for all current specifications, with a wide variety of enclosure types and mountings. Your nearby Wagner engineer can help you select the *right* motors for your needs. Call the nearest of our 32 branch offices, or write us.

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WM53-6

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For Better Construction *SAFER* Maintenance!

TVA's New Microwave Facilities

First link of Tennessee Valley Authority's new microwave radio facilities is now in service. The new channel connects TVA's power division headquarters in Chattanooga with Wilson Dam, Ala. Inspecting the new equipment in TVA's Chattanooga office are E. H. Ownbey, radio engineer for the authority; C. A. Benenson, engineer for Federal Telephone & Radio Co; G. O. Wessenaur, TVA manager of power; and G. E. Farmer, chief of TVA's communications and engineering branch.

Two other links connecting Chattanooga with Nashville, and Wilson Dam with Jackson, Tenn., will go into service shortly, augmenting the authority's private communications system by 353 miles of microwave channels at an estimated cost of $705,000 for the three new links. Each of the new links initially will carry five telephone circuits and one teletype circuit, with an ultimate capacity of 22 telephone and 19 teletype or telemetering circuits.

POWER BRIEFS

• Federal Power Commission is making available latest revision of its map series showing principal electric utility generating plants and transmission lines in the United States. The maps may be purchased from Publications Division, Federal Power Commission, Washington 25, D. C.

• British Electricity Authority's chairman, Lord Citrine, has predicted that Britain's power shortage will grow worse unless more generating plants are built. If the government does not increase its expansion program, he said, shortage of capacity will have grown by about 1 million kw by the end of 1955. Capacity now stands at 15.5 million kw and the authorized expansion program will add 9.5 million kw by the end of 1959.

• Southern California Edison Co plans to start construction this month on a $44-million steam plant at El Segundo, Calif. The plant will consist of two generating units. The first, with a capacity of 156,000 kw is scheduled for completion by the middle of 1955. The plant will be of outdoor design and will burn petroleum pitch as the principal fuel. Ocean water will be used for cooling.

• Tennessee Valley Authority's net income from the sale of power showed a decline for the fiscal year ended June 30. The drop was attributed to severe drought in 1952 which curtailed hydroelectric production. Power operations for fiscal '53 netted $19 million, a return of 2.7% on the $710 million invested in electric facilities. TVA's hydro output for last year was 10% below production for the previous year.

Upper Peninsula Power Acquires New Facilities

Under a recently signed agreement, Upper Peninsula Power Co, Houghton, Mich., will take over the transmission and distribution facilities of Cliffs Power & Light Co, Ishpeming, and will supply power to the customers formerly served by Cliffs P&L.

Customers which Upper Peninsula Power will take over are iron mines other than Cleveland Cliffs Mines, and other industrial, wholesale and retail customers in the vicinity of Ishpeming, Negaunee, Munising, and Inland Lime & Stone Quarry near Blaney. Upper Peninsula Power will transmit power from the Cliffs plants to the operations of Cleveland Cliffs Iron Co.

Through the formation of the Upper Peninsula Generating Co, the two companies jointly will own and construct a lakeside steam generating plant, the tentative location being in the Marquette area. First unit of 22,000 kw is scheduled for completion not later than January 1956.

Upper Peninsula Power also will build a transmission line from Humboldt to Atlantic which will interconnect its present system with that of the newly acquired system.

LEGAL NOTICE

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION

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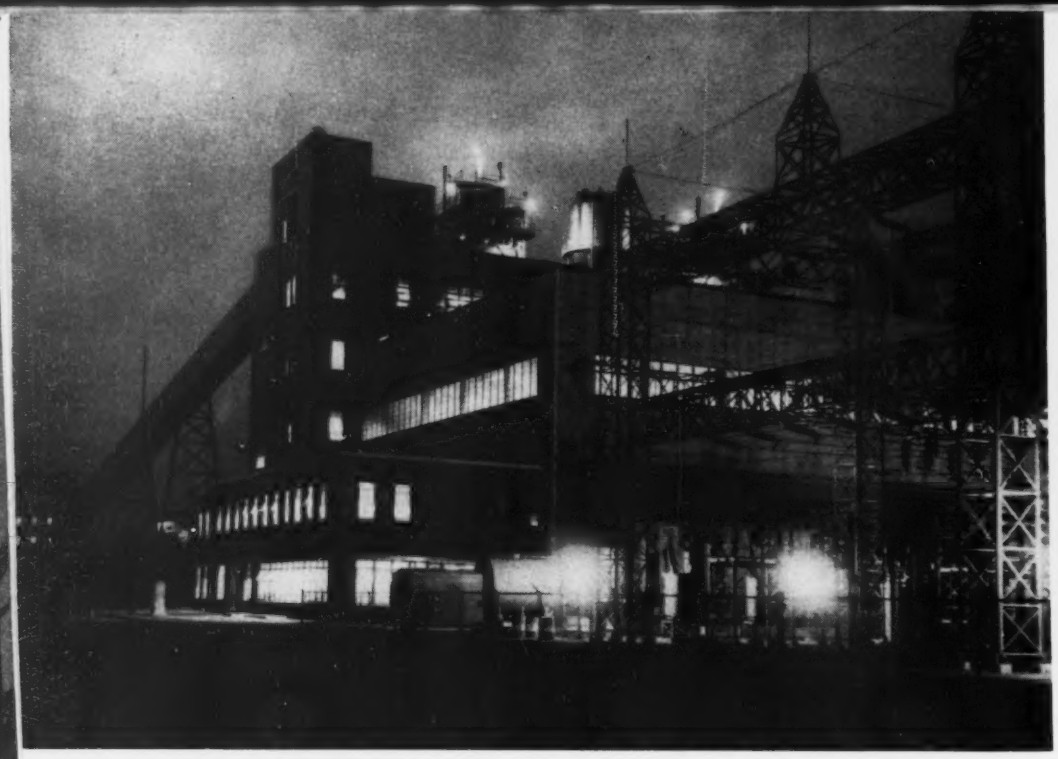
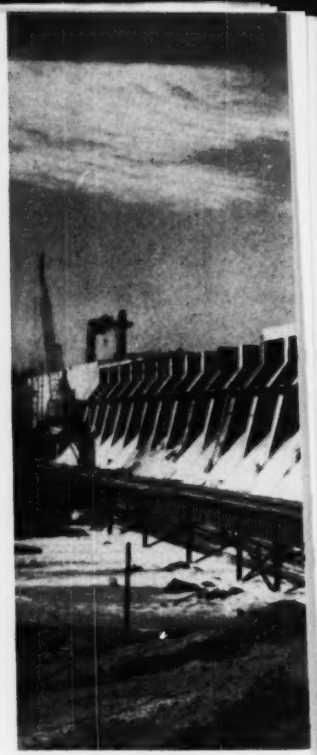
McGRAW-HILL PUBLISHING COMPANY, INC.
By J. A. GERARDI, Vice Pres. & Treas.

Sworn to and subscribed before me this 10th day of September, 1953.

[SEAL] ELVA G. MASLIN
(My Commission expires March 30, 1954.)



STEAM CAPACITY, such as this at Plant Yates . . .



. . . has caught up

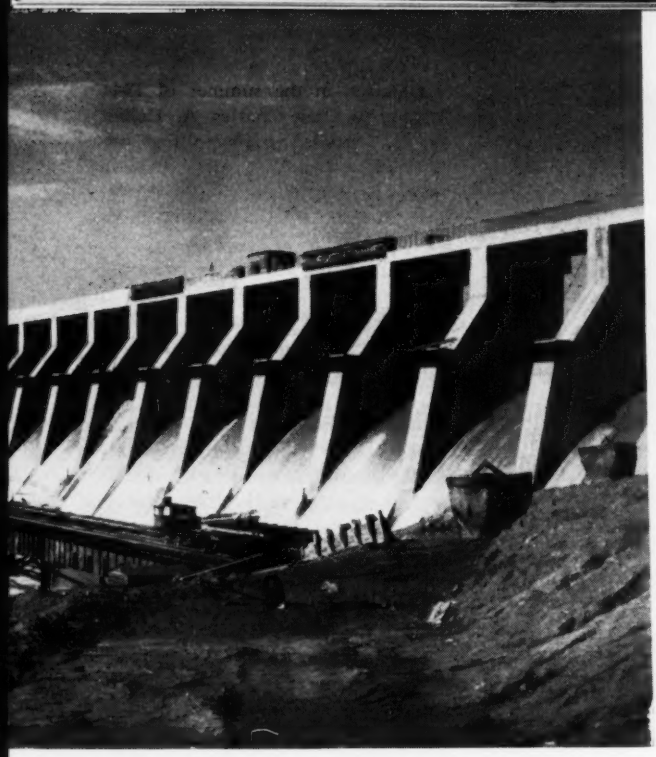
Technical
Social

Georgia Power Execs See Two

RURAL ENGINEERS help farmers install electrical equipment such as this . . .

. . . and instill desire to make better use of land by awarding prizes in annual competitions for pastures such as this

COMMUNITY DEVEL-
sentative explains com-



with hydro, symbolized by company's new Sinclair Dam

Sides to Progress

OPMENT is fostered in meetings like this, in which a GP repre-pany's Champion Home Town Contest to a local delegation

● Georgia Power Co executives believe in making progress two ways: technically and socially. The technical advance most power company heads accept as a matter of course. But these men feel that as their community advances, so must their company, and thus the emphasis on their slogan, "A Citizen Wherever We Serve."

The words have been put to action, for Georgia Power officials feel a utility can't just keep up with the area it serves—it must be in a position to stimulate the area's growth. They see their grass roots business philosophy of getting close to the people and lending a helping hand producing bountiful results.

It was this philosophy of helping to develop the entire state that led to friendly cooperation with federal agencies in development of electric power in the state. That co-operation has been of historic significance, especially in the buildup of rural electrification.

Events are now shaping up which bear out the soundness of the policy of cooperation: "If we can't do it we will help others."

The temporary agreement to distribute federal power from Clark Hill Dam is likely to lead to a permanent contract for Georgia Power not only to distribute power generated at Clark Hill, as it now does with Allatoona power, but that to be generated at Jim Woodruff and Buford Dam projects.

Cooperative Approach . . . The proposal of Georgia Power to distribute government power at no profit is part of the company's general policy adopted back in the days when REA was created—not to fight government power but to cooperate so that the largest number of people would gain maximum benefit from it.

Georgia Power first launched an aggressive rural electrification program back in 1927 and the program was well under way when REA started in 1936. At that time GP had 1,998 miles of rural lines serving 27,812 farm customers. Now it has more than 10,000 miles of lines and 165,000 customers. That is in addition to all the REA members, the two together providing electricity to about 95% of Georgia's farmers.

But in those early days GP recognized that if rural Georgia was to be quickly electrified it would require more than its then financial resources. To insure that Georgia got its share of government assistance and that REA-financed co-ops would be a success, GP announced that where it could not build it would help others. It set out to give every assistance to the co-ops, offering technical, engineering, sales and specialized services without cost.

This wholehearted cooperation has paid off. There are 37 co-ops buying their power from GP, directly or indirectly, and there exists an excellent relationship. The co-ops get all the benefits of GP's promotion, just as any other customer.

Over Other Lines . . . In 1949 GP extended this cooperative power policy to the REA co-ops and municipal systems in the territory served by Georgia Power & Light Co. Through this arrangement, GP sells power at 6.5 mills per kwhr and GP&L adds but handling charges and line losses to the cost. Thus six co-ops and five wholesale municipalities have received large reductions in power rates and an assurance of a dependable supply of power as a result of this agreement.

GEORGIA POWER PRES HARLLEE BRANCH: "The state cannot be economically strong and prosperous unless all the communities are prosperous."

Georgia Power officials contend the company's rates for service to REAs and municipalities are so low as to make it uneconomical for them to purchase government power.

They point out there has never been any serious public power movement in the company's territory. Not even when the Roosevelt Administration promoted municipal power plants through 45% PWA grants was there much of a stir. No town in Georgia sought such a PWA offer, nor has any city sought TVA power.

Here is how the REAs have grown in Georgia:

Back in 1937 there were 9 co-ops with 543 kw demand and sales of 448,000 kwhr. The rate was 1.408 cents per kwhr. The following year the number doubled and demand jumped threefold. By 1939 the number rose to 36 co-ops with 4,822 kw demand and 10,101,000 kwhr use. Last year the 37 REAs had a demand of 117,213 kw, with 423,295,000 kwhr usage and the rate was down to 0.67 cents per kwhr.

Georgia Power also sells power wholesale to 44 municipal systems which have 125,501 kw demand and purchased 541,476,000 kwhr last year at an average cost of 0.677 cents.

The Philosophy . . . There is a meaning back of this cooperative power policy, a fundamental meaning which has gained advantage and great economic strength to the entire state. Pres. Harllee Branch says the state cannot be economically strong and prosperous unless all of the communities are prosperous. All of the people must share in the wealth and natural resources of the state. And this means wider use of electricity.

GP considers every citizen of Georgia one of its customers and it never draws a line when it comes to helping a community in a civic project or gaining a new industry. The location is not too important, just so long as it is in Georgia.

These communities have felt the helping hand of GP in rural electrification, community development and industrialization and agricultural programs. Its agricultural programs have stimulated more profitable farming, diversification of crops, the 4-H clubs, the Future Farmers of America groups, along with veterans' pasture contests and livestock raising.

Civic Effort . . . While the company's promotion and sales programs have been highly noteworthy, one of the finest has been the community development. There is hardly a schoolager or a civic minded businessman who has not felt the inspiration of this program which attracted national attention and is now being copied in many sections.

It started in the summer of 1944 when Vice Pres Charles A. Collier began a detailed study to find out what Georgia lacked and what was needed to make the state more inviting to its 300,000 veterans when the war was over.

The program was for the communities to do for themselves: Make up the deficiencies in hospitals, educational facilities, playgrounds, social and business opportunities.

Collier travelled 35,000 miles selling his program, firing the imagination of thousands. It caught on quickly and the number of projects completed now are counted in the thousands.

In 1948 the program was broadened with community competing against community in civic development. GP instituted the Champion Home Town Contest. In the six years 1,543 communities have entered the contest, including 251 this year.

For sponsoring the contest, the utility in 1951 won GE's coveted Coffin Award.

So great has the value been to the state that on Feb. 12, 1951 the Georgia House of Representatives passed a resolution praising Georgia Power for its Champion Home Town Contest and congratulating it on the good work for the state.

The Technical Advance . . . On the engineering side of the company's ledger, Georgia Power is backing its belief in Georgia and its bullish forecast with a $45-million expansion and construction program, the largest in its history.

Next year the amount spent will be about the same. This on top of $192-million actually spent since 1946 on power facilities.

GP has nearly doubled its generating capacity—from 606,214 kw to 1,111,300 kw—and by 1954 capacity will be upped another 345,000 kw to give the system 1,455,830 kw, divided 351,830 kw in hydro and 1,104,000 kw in steam.

Georgia Power believes that its grassroots policy and its cooperative power policy have been big factors in the growth of the state, and, as a result, of Georgia Power. To those who doubt, it offers this proof: For the 1945-52 period Georgia Power customers increased 72%, against 42% for the industry, kwhr sales 103%, against 82%.

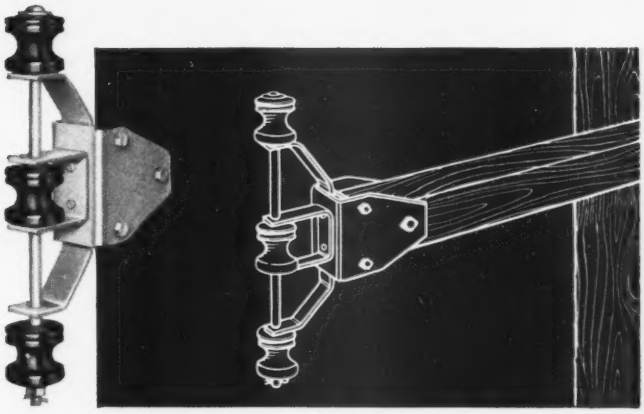
That sort of proof sounds fairly convincing.

LINE CONSTRUCTION BLUEPRINTS

HOW SOME UTILITIES ARE MAKING CONSTRUCTION WORK EASIER . . .
IN WAYS THAT MAY BE HELPFUL AND USEFUL TO YOU.

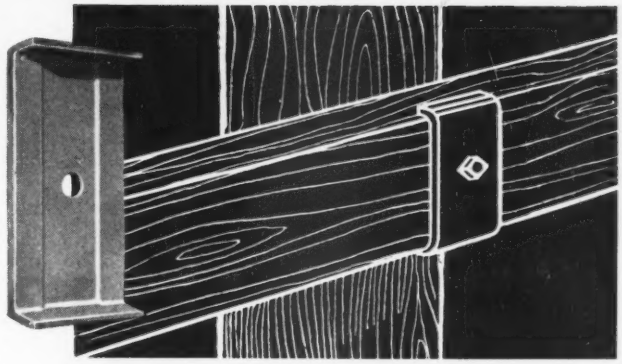
CROSSARM END RACK

Designed to take 3-wire service leads directly from the end of the secondary crossarm. Tends to conserve pole space and clean up overcrowded poles—without impairing climbing space. Heavy galvanized steel. 5/8" button-head thru-rod. Cat. No. 330073B1.



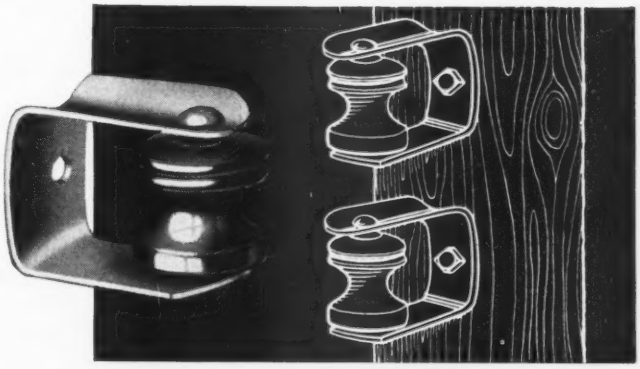
CROSSARM REINFORCING PLATE

For use over crossarms with crossarm mounting bolts to make doubly sure that the arms won't split or check. Heavy 3/16" steel, 3 3/8" wide by 8" long, thoroughly galvanized, with 3/4" offset angle end and 13/16" diameter hole. Cat. No. 323489X1.



SINGLE SPOOL SECONDARY RACK

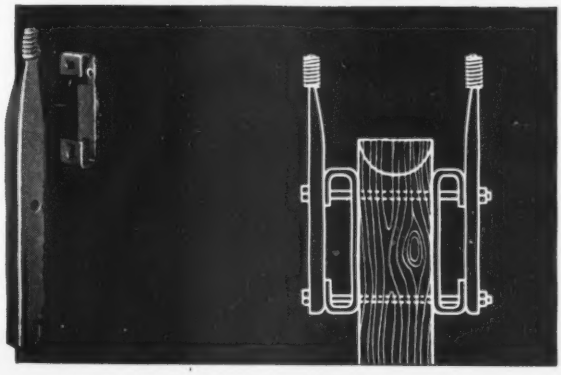
Heavy gauge steel strap base 3" wide, with 4" length from pole to 5/8" steel insulator pin. Base is curved to fit the pole, insuring a good, rigid installation. Available with or without wet or dry process spool insulators. Cat. No. BA25X7 (without insulator).



POLE TOP PIN and MOUNTING BRACKET

A strong pole top pin and a companion extension bracket that can be mounted singly or in pairs. The pin is No. 8 gauge steel. Transverse loading, 1500 pounds, longitudinal loading, 1200 pounds. Cat. No. 317011B1.

Bracket is 1/4" steel; gives 2" extension from pole. Bolt holes and slots accurately match the pin. Cat. No. 211048A1.

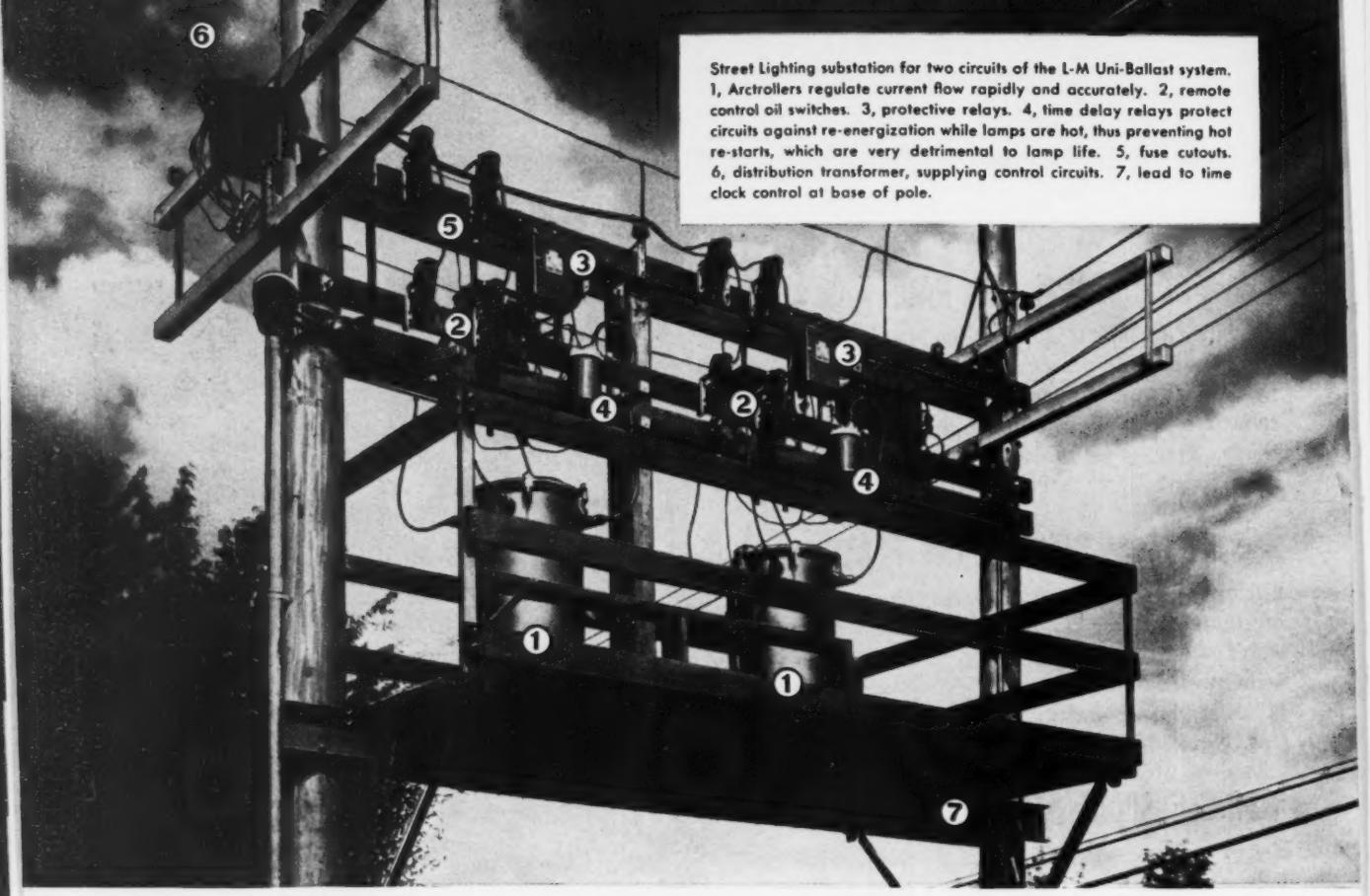


Do you have a line construction problem?
These are just a few of thousands of L-M line construction specialties. If you have a problem, let us know. We may have standard or special items in stock that will solve it. Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL

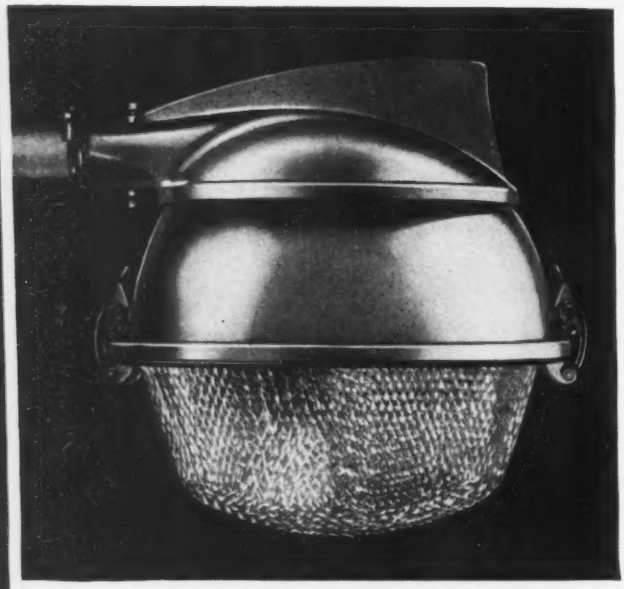
Line Construction Materials

Complete Coordinated Equipment for Distribution Today



Street Lighting substation for two circuits of the L-M Uni-Ballast system. 1, Arctrollers regulate current flow rapidly and accurately. 2, remote control oil switches. 3, protective relays. 4, time delay relays protect circuits against re-energization while lamps are hot, thus preventing hot re-starts, which are very detrimental to lamp life. 5, fuse cutouts. 6, distribution transformer, supplying control circuits. 7, lead to time clock control at base of pole.

L-M Uni-Ballast System



L-M's Ovalite is a highly effective mercury vapor luminaire for installations using the L-M Uni-Ballast system.

Features of the L-M Uni-Ballast System

A new system for the operation of mercury vapor street lighting luminaires

1 Eliminates Ballasts: With the Uni-Ballast system, up to 25 lamps are operated on one Arctroller, a static-type regulator. Individual ballasts are eliminated—resulting in important savings.

2 Simplified Construction: Elimination of ballast housings makes this substantial expense unnecessary, and gives a simpler, neater installation.

3 Higher Electrical Efficiency: The Uni-Ballast system saves 10 to 11 per cent of the electrical energy required by an individual-ballast system. Power factor of the Uni-Ballast system is 95%, compared to 38% for a moving-coil regulator. Line loss is reduced 75%.

4 Simplified Control: The Uni-Ballast system carries up to twenty-five 400-watt mercury vapor lamps with a single control station.

5 Better Cold Weather Starting, longer lamp life: adequate voltage is available for starting lamps down to 40° below zero. Therefore no half-load starters or other auxiliary starting devices are needed. Time delay relay prevents hot re-starts, which cut lamp life.

6 Reduces Wiring Material: Where new conductor is being installed, the amount of copper for circuit wiring can be reduced by more than 50%, as compared with multiple ballast systems.

7 Gives Full-Load Operation: The Arctroller will start strings of lamps up to its full rated capacity. A 10 kw Arctroller handles twenty-five 400-watt lamps, which, on a conventional series-ballasted system, would require a 25 kw regulator.

"Uni-Ballast" and "Ovalite" are Line Material Company trademarks

L-M Uni-Ballast-operated mercury vapor street lighting system in South Milwaukee, Wis., one of the first cities to adopt the system. Mayor Dean L. Potter reports substantial savings in both installation and operation, and complete satisfaction with the system.

Saves Up To $90 Per Pole In Mercury Vapor Street Lighting

by **M. C. HARSH**
Manager Lighting Service
Line Material Company

With L-M's Uni-Ballast system of series mercury vapor street lighting, you eliminate individual ballasts, which results in a saving of material and installation cost. You can save the extra cost for steel transformer base housings or pole top mountings. You can save on conductor.

The Uni-Ballast system utilizes the Arctroller, which regulates the power flow in the system to correspond to lamp requirements. Being a static type regulator, the Arctroller reduces surges on the secondary circuit to a minimum. The Arctroller operates with split-second timing to regulate the circuit to predetermined values. Uni-Ballast relieves the system designer of voltage-drop problems usually associated with long spacing between luminaires on multiple systems.

Higher System Efficiency

Electrical efficiency is increased. Individual ballast losses consume about 11% of the rated lamp watts. The single L-M Uni-Ballast Arctroller has a transformation efficiency of about 94%.

Power factor is improved. The Uni-Ballast system provides a 95% power factor, compared with a factor of 38% for a moving coil regulator.

You get better lamp operation, because the characteristics of the regulated power supply are coordinated with those of the lamps. Line loss can be reduced to about 25% of that of a series-operated ballast system.

Many Other Advantages

The Uni-Ballast system provides single point control. Cold weather starting is greatly improved. In a new installation, smaller conductor may be used, as line losses for a given size conductor with the Uni-Ballast system are only 25% of those with the standard series-operated ballast system.

Lamps last longer, because the time-delay device prevents re-starts when lamps are hot—an operating condition detrimental to lamp life.

The L-M Arctroller, the heart of the Uni-Ballast system, can be operated up to its full load capacity. A 10 kw Arctroller can handle 25 400-watt lamps, where the conventional series-ballasted system would require one 25 kw regulator.

Ask L-M Field Engineers for Complete Information

L-M's Uni-Ballast system offers many advantages. Ask the L-M Field Engineer for a complete discussion on its pros and cons and about L-M's outstanding lighting engineering service. Or write Line Material Company, Street Lighting Division, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

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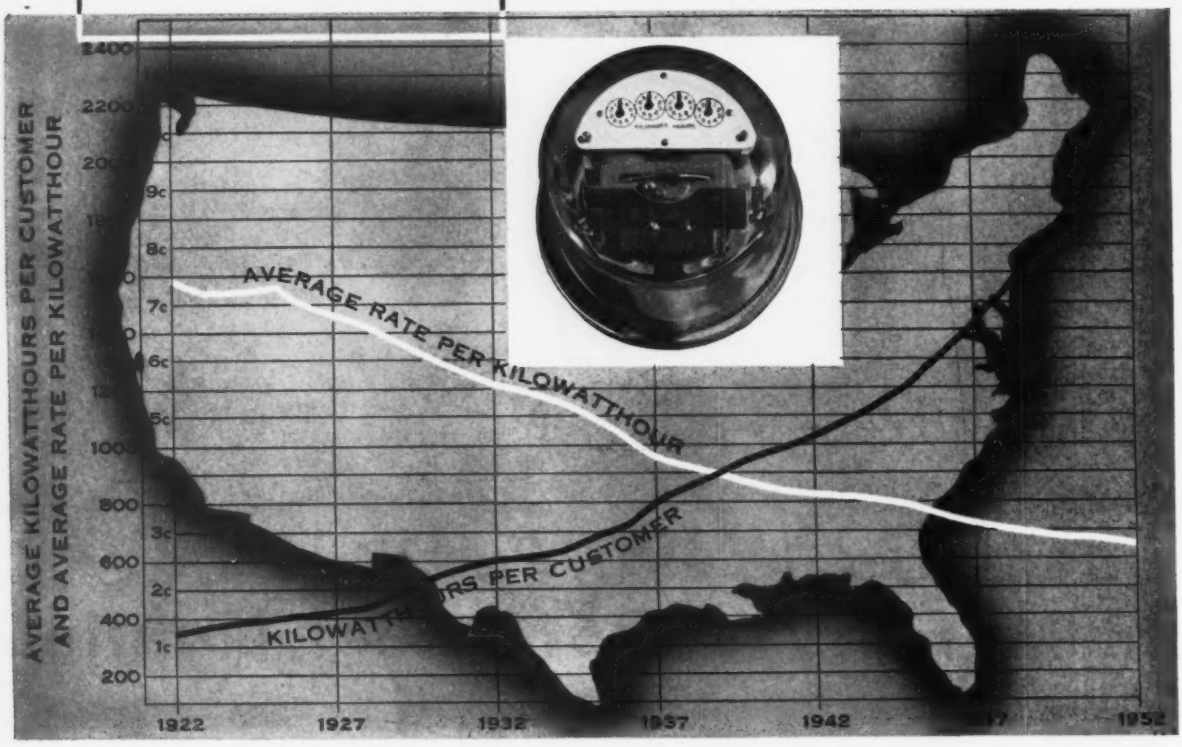
LM® LINE MATERIAL *Street Lighting*

a full measure of value

Sangamo J Meters



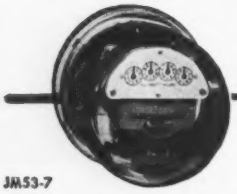
Throughout the years, with steadily lowered rates, Utilities have given consumers a full measure of value.

Just as rates have gone down, meter costs per kw of capacity have gone down and values have been increased.

Meter department executives want definite overall values from the watthour meters they buy. They look for such values as—sustained accuracy under varying temperatures . . . quiet long-life operation . . . ease of calibration and repair . . . resistance to corrosive atmospheres . . . ample capacity to measure heavy loads—values that add up to minimum maintenance. These and many other values have made Sangamo J Meters the choice of metermen everywhere.

SANGAMO

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS



Only Measured Facts are Known Facts

JM53-7

H. E. Chambliss Is Promoted

Montana Power elevates former Great Falls Division manager to chief engineer. Utility also makes supervisory changes

H. E. CHAMBLISS

H. E. Chambliss, Great Falls Division manager of Montana Power Co for the past ten years, has been appointed chief engineer of the company with headquarters in Butte. He replaces A. B. Martin, who has resigned to become research consultant for Washington Water Power Co, Spokane, Wash.

Montana Power also made a series of promotions among supervisory personnel. The changes include:

Dix C. Shevalier is advanced from Great Falls Division superintendent to division manager to succeed Chambliss. Herold E. Murdock, superintendent of the Bozeman-Livingston Division, is transferred to Great Falls as division superintendent. David C. Johns is elevated from Great Falls assistant electrical engineer to assistant superintendent of the Bozeman-Livingston Division.

Chambliss, who graduated from Clemson (S. C.) College in 1914 with an electrical engineering degree, became associated with Montana Power in 1919. He became division superintendent in Great Falls in 1933 and division manager in 1943.

Ayers Made a Vice President

THOMAS G. AYERS

Thomas G. Ayers, assistant vice president of Commonwealth Edison Co since 1952, has been elected vice president in charge of industrial relations for the utility. He succeeds Robert F. Creutz, who has resigned because of ill health.

Ayers has been with the Edison system for 16 years, having joined Public Service Co of Northern Illinois following his graduation from the University of Michigan in 1937. Public Service is now a division of Commonwealth Edison.

Creutz started with Commonwealth Edison in 1937 as federal tax supervisor in charge of federal tax activities. In 1948 he was named vice president of industrial relations.

•

Alton K. Marsters, assistant to the president of Colt Manufacturing Co, Hartford, Conn., has been appointed director of sales for all divisions to succeed Richard S. Havourd, who now assumes other duties.

JAMES F. MAGIN

James Magin Named a VP of Square D Co

James F. Magin has been elected vice president of Square D Co, Detroit, Mich. He will make his headquarters at the company's Milwaukee plant, where he has been assigned as staff assistant to the general manager in the special controls section. The Milwaukee plant is headquarters for Square D's Industrial Control Division.

Magin, who received his engineering degree from Yale University in 1943, started his Square D career in the production department of the Milwaukee plant. After a two-year assignment there, he served with the Kollsman Division as a member of the research engineering staff. Subsequently, he served with the sales department at Milwaukee, and later was given assignments to the company's Los Angeles and San Francisco plants. From March, 1950, to June, 1951, he had charge of a study of pensions. He was elected a director of Square D in February, 1952.

Elected Research VP

Dr James F. Eversole has been appointed vice president in charge of research for Bakelite Co, a division of Union Carbide & Carbon Corp, New York. Dr Eversole, who joined Union C&C's research organization in 1929, has served for the past two years as manager of research administration for the corporation.

RMEL Elects Koch President

League's new head is vice president in charge of operations for Public Service Co of Colorado. Group names 3 VPs

MARSHALL M. KOCH

Marshall M. Koch, vice president in charge of electric operations for Public Service Co of Colorado, has been elected president of the Rocky Mountain Electrical League. Koch, who was Colorado vice president of RMEL in 1952-1953, succeeds H. Hugh Lenhart, vice president of Cheyenne (Wyo.) Light, Fuel & Power Co.

The association also elected the following vice presidents: D. B. Hyer, Jr, Southern Colorado Power Co; J. A. Chapman, Rawlins Electric Co; and L. A. Goalby, Westinghouse Electric Corp, Denver.

W. A. Terry, Home Light & Power Co, Jasper, Minn., was named chairman of the Utility Division. C. S. Stern and Harry Adler, both of Arvada Electric Co, were reelected treasurer and assistant treasurer, respectively.

Began as Junior Engineer . . . After graduating from Cornell University in 1913 with a B.S. degree in mechanical engineering, Koch was employed as a junior engineer with the Denver Gas & Electric Light Co, a predecessor of Public Service Co of Colorado.

He assumed general supervision of the electric distribution department in 1921 and in 1947 was appointed assistant general superintendent of electric operations.

In October of 1947 he was elected vice-president in charge of electric operations. He became a director in 1948.

The league's new president is also a member of the American Institute of Electrical Engineers.

•

Myles H. MacMillan has been named personnel director of Ohio Valley Electric Corp. He will assume his new duties in OVEC's temporary offices in New York. MacMillan formerly was assistant to the vice president in charge of operations at the Ingersoll Products Division of Borg-Warner Corp, Chicago.

Harry M. Schelden has been promoted to manager of Pennsylvania Power & Light Co's Lehigh Division. Schelden, who began his career with Pennsylvania P&L in 1921, formerly was manager of the utility's field practices section. In another appointment, **W. S. Brokenshire, Jr,** assistant superintendent of construction, was elevated to superintendent of construction to succeed **E. E. Chubbuck,** who has retired after more than 35 years in utility construction work. Brokenshire, who joined Pennsylvania P&L in 1924, was advanced earlier this year to assistant superintendent of construction. Chubbuck, with the Pennsylvania utility since 1933, became superintendent of construction a year later.

OBITUARY

Ray A. Moncrieff, 67, vice president of Charles T. Main, Inc, Boston consulting engineers, died at Newton, Mass., Sept. 28. Moncrieff, who was widely known in the hydroelectric field, had participated in the planning of the atomic energy program at Richfield, Wash., and Black Eagle and Kerr dams in Montana.

Frank C. Reed, 74, a retired vice president of Westinghouse Electric Corp, died Sept. 17 in Grove City, Pa. Reed, who joined the Westinghouse organization in 1903, served as president of Westinghouse Electric Elevator Co for six years before becoming a vice president of Westinghouse in 1942.

H. S. PAHREN W. E. WIDAU J. H. STRICKLER

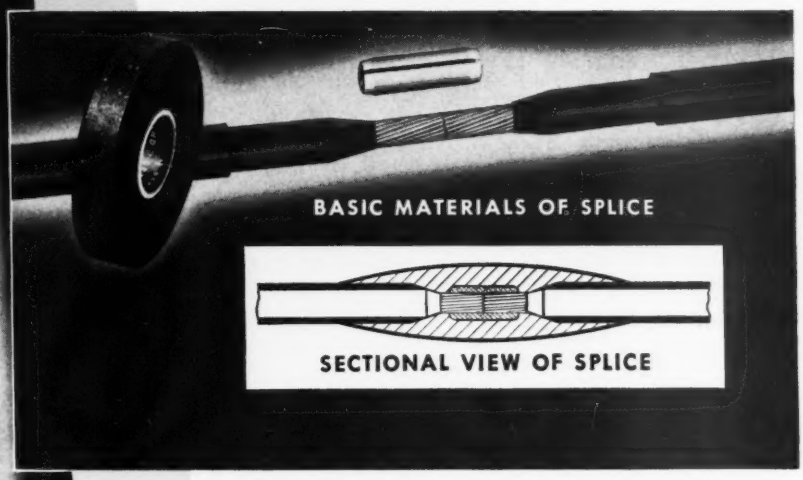
Elliott Co Names 3 Commercial VPs

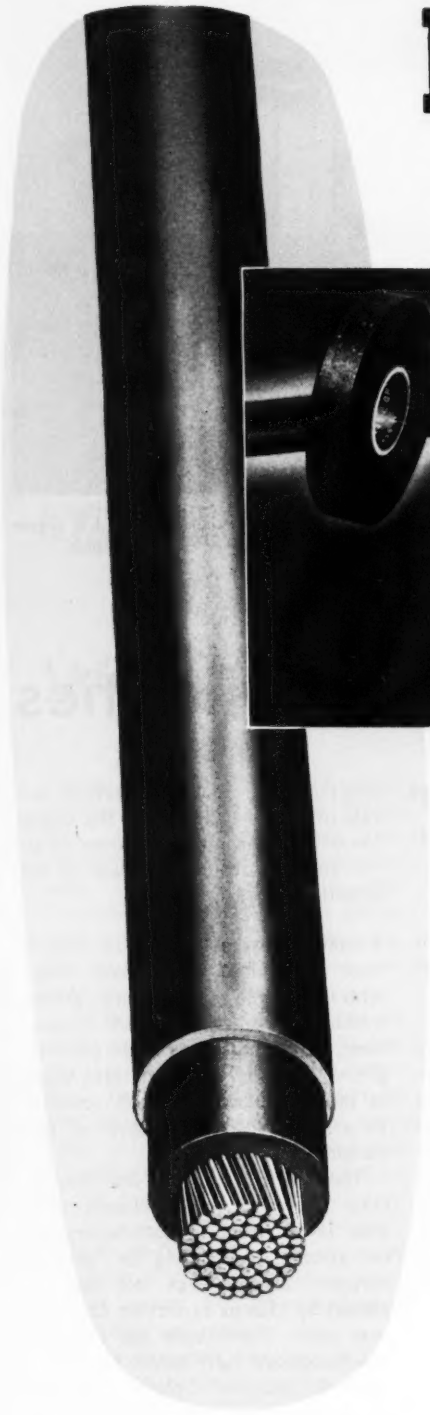
Elliott Co, Jeannette, Pa., has elevated three district office managers to the post of commercial vice president. They are: H. S. Pahren, W. E. Widau, and J. H. Strickler.

Pahren, who joined Elliott in 1924, has served as New York district manager since 1946. Widau, a 33-year veteran of Elliott, has been since 1941 Chicago district manager as well as Mid-Western manager. Strickler, who was assigned as a field engineer in the firm's Pittsburgh office in 1923, has been manager of that office since 1931. The newly elected officials will maintain their present headquarters.

Rome RoZone®

Superior Ozone-Resistant Insulation Deserves Your CONFIDENCE





What its Ease of Installation Means to You

Q: Where can RoZone insulated cable be installed?

A: It is successfully installed in any location, whether direct in earth, in conduit, in racks, overhead or in combination runs.

Q: How is RoZone spliced and terminated?

A: Splicing and terminating can be accomplished by simple manual methods that have been time proven—require little experience. No potheads are necessary. It is easy to strip, clean to handle.

Q: Why are fewer splices required with RoZone?

A: It can be manufactured in longer lengths and its light weight makes it possible to pull these lengths easily. As a nonmetallic sheathed cable, it does not require special lubricants.

Q: Can RoZone be joined to other types of cables?

A: Yes. By proper splicing techniques, RoZone may be joined to most other types of cable.

Ease of installation, combined with exceptional resistance to aging, corona, and ozone cutting plus low dielectric loss and excellent electrical stability in water, is why RoZone deserves your confidence. For complete information, send for the Rome Power and Control Cable Catalog.

It Costs Less to Buy the Best

RoZone is approved and accepted by leading utilities, industrials and consulting engineers

ROME CABLE
Corporation
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and
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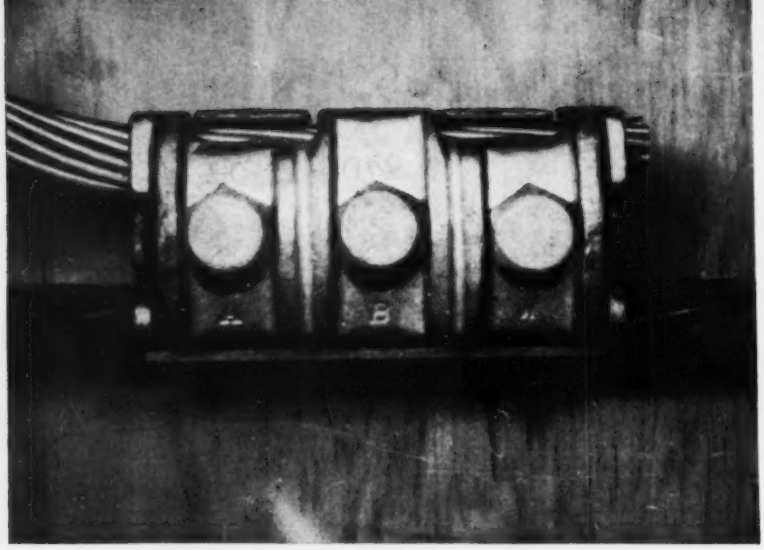
ROME CABLE ROME, N.Y.

Plated Connectors Fail . . . . But Aluminum Bodied Connectors Stand up as . . .



THREE-BOLT PARALLEL-GROOVE CLAMP joins 336,400 cm aluminum to No. 4/0 copper to serve 200-amp load successfully where greased and taped copper connector failed

Savings Outweigh Difficulties

High unit pressure and load cycling cause cold flow of aluminum in older connectors. But experience points to solutions and reduction in investment is appreciable

JOE H. EXUM, Assistant Operating Supt, Jackson Electric Department, Jackson, Tennessee

Six years ago the Jackson Electric Department switched almost completely to aluminum (ELECTRICAL WORLD, Feb. 28, 1948, p. 64-6) Nearly 40% of the system is now all-aluminum and ACSR. Approximately 160,000 lb. of bare wire, No. 2, No. 3/0, and 336,400 circ mil, has been installed for primaries and secondaries. Around 5,000 covered aluminum services from No. 6 to multiple 336,400 circ mil have been run on a system with approximately 12,000 customers.

Very little copper has been installed except for pole grounds, transformer risers, and other such uses for which alumnium is less suitable.

This switch has involved the use of thousands of connectors, some of which are doing a poor job. It is quite normal to try to keep down warehouse stocks of connectors and simplify connections but we have found that plated bronze connectors are not satisfactory for aluminum wire. Percentage-wise, their failure rate has been low. But some of the failures have been costly.

Early Designs Fail . . . A piece of 336,400 circ mil weatherproof aluminum served a bakery and carried a load of approximately 200 amp. After a load cycle of 6 days on and one day off for 3 years, the connection failed. Corrosion-inhibitor grease and tape were originally applied to the joint, so we feel that the failure was due to "cold-flow" rather than galvanic action. A similar connector recently removed from a different service was just starting to fail as evidenced by slight corrosion in the aluminum side. Still a third connector removed at the same time as the latter showed no sign of trouble.

We have found that 2-bolt bronze connectors are completely satisfactory in all sizes for copper-to-copper connections. However, the high unit pressure exerted by this connector causes aluminum wire to "cold-flow" as it heats and cools from cycles of load current. Ultimate failure is inevitable, depending on amount of current and rate of load cycling, unless the clamp has enough inherent springiness to allow for the greater expansion of the aluminum wire.

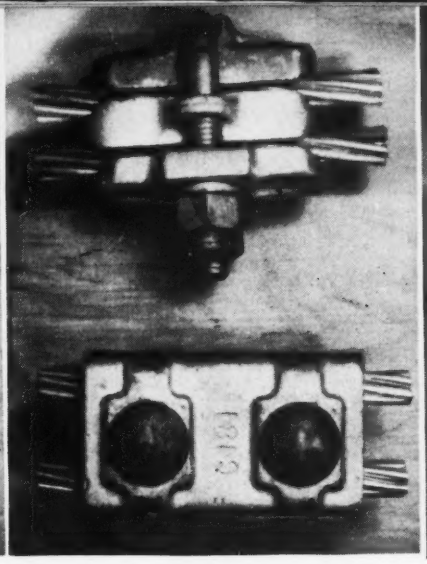
Parallel Grooves Help . . . Compare these connectors which have failed with the parallel-groove clamp, above, which we now use for such connections. The contact area of the parallel-groove clamp is more than three times as much, reducing the unit pressure to a point where cold flow of the aluminum will not occur.

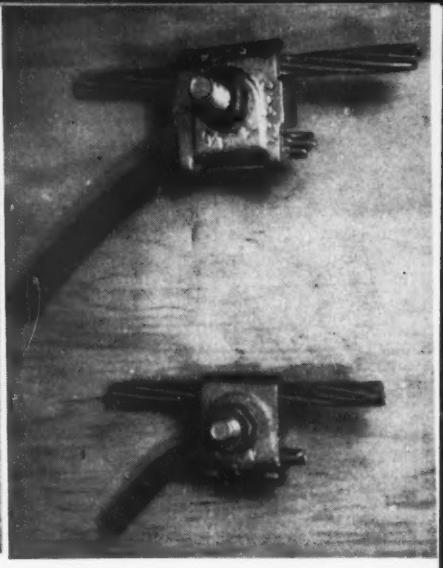
The same is true of hot-line clamps. Only aluminum-bodied clamps with wide jaws have been satisfactory on our system. The plating on "general purpose" clamps does not last as proved by clamps in service for only four years. Fortunately the problem was recognized early before too many "general purpose" plated hot-line clamps had been installed on aluminum wire in our urban system where higher load currents and heavy fault currents prevail.

Installation of stirrups for hot-line clamps on both aluminum and copper is worthwhile. A stirrup that can be installed quite easily with hot sticks is shown at the right.

For smaller wires and service drops, aluminum - bodied parallel - groove

ALUMINUM-BODIED HOT-LINE CLAMPS prove good. Wide jaws distribute pressure





PARALLEL-GROOVE CONNECTORS like these are used to join aluminum to aluminum and aluminum to copper. Clamps at the right are for the smaller conductors

With Aluminum Distribution

clamps are preferable to both plated connectors and split bolts with "butterflies." Plated connectors have given considerable trouble from corrosion. Split bolts with copper-aluminum "butterflies" have done a good job on solid wire to solid wire connections. But on stranded wire they have not held up.

Further, the split bolts must be taken apart for applying to the line, and it is easy to drop the nut or butterflies. The parallel groove clamps, on the other hand, need not be taken apart, and they can be tightened with a smaller wrench than is required for a split bolt.

Five Types Needed . . . For proper installation of aluminum wire on a part copper system, five separate lines of connectors are needed:

1. Bronze split bolt and two-bolt clamps for copper to copper;

2. Aluminum - bodied parallel-groove or U-bolt clamps with copper liners soldered in one groove for copper to aluminum;

3. Aluminum - bodied parallel-groove or U-bolt clamps for aluminum to aluminum;

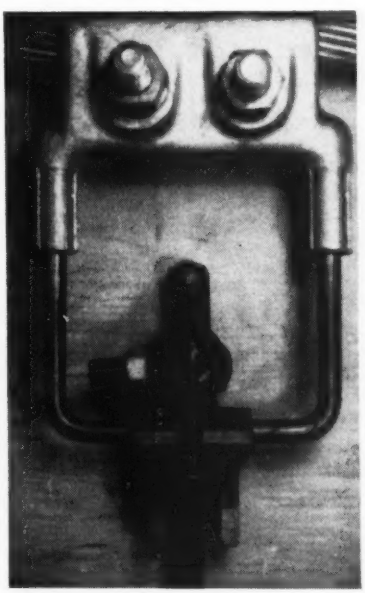
4. Bronze hot-line clamps;

5. Aluminum - bodied hot-line clamps with butterflies under the tap eye bolt.

For splicing, compression type sleeves are preferred, employing a hand tool for smaller sizes and a hydraulic tool for the largest size. We expect to use automatic splices and dead-ends for all-aluminum wire extensively in the future.

For all copper-aluminum joints exposed to the weather the aluminum conductor should be placed above the copper to prevent corrosion from copper salts running down to the aluminum. Anti-corrosion grease on aluminum connections is recommended. It stays with the connector for a long time. Some connectors removed recently after five years of exposure without tape were still as bright as new after the grease was wiped off.

A one pound hand operated grease gun makes the messy job of applying the inhibiting compound much less messy.



STIRRUP has aluminum clamp for the aluminum line conductor and provides a copper loop for the copper alloy hot tap connector

Aluminum Reduces System Cost . . . Despite some trouble with aluminum, in six years we have installed about $50,000 worth of bare all-aluminum. Equivalent bare copper would have cost at least $100,000. We have saved an additional $15,000 or so by using aluminum service wire rather than copper. This money saved is in first cost of the wire. There are additional savings, although they are hard to estimate, in labor of installation, since aluminum is so much lighter and easier to handle than copper especially in the larger sizes.

"Is a $65,000 saving on a $2,000,000 distribution system worth a little extra warehousing time and training time?" We believe it is.

Nylon Safety Straps Win Out in Tests

NYLON SAFETY STRAP with steel snaps took over 3000 lb before failure. Same type strap with buckle took over 1000 lb before failure

Lineman safety straps of fibrous 2-ply nylon were superior to cotton or leather in tests made by Pacific Gas & Electric Co. Several types of nylon straps were subjected to the tests. These showed that the strap coatings and the method of cementing the ply were important factors for durability and strength under various circumstances of service.

The test results on the best type of strap are described below and in the table.

Tensile Strength Test . . . The picture shows how this test was made by looping the strap around a 6-in. pulley, simulating a line pole. Load was applied until failure occurred.

Additional tension tests were made with buckles instead of steel snaps. Failure at the buckle hole occurred at 655 lb as compared to 3,090 lb for straps with steel snaps. The steel snaps utilize the full strength of the strap.

Abrasion Resistance Test . . . For this test, a special wear test machine dragged an emery wheel across a sample piece of belt 30,000 times. Resistance to abrasion was measured by comparative depths of wear on various sample pieces.

Preservative Resistance Test . . . To determine the effect of creosote and pentachloraphenol on nylon, samples were soaked in each preservative for 24 hours and then exposed to sun and air for three months. These tests showed that the preservatives had very little influence because the samples retained a minimum of 95.3% of the strength of those not soaked in the preservatives.

Influence of preservatives on the neoprene cement of the ply was determined by ply-separation tests. The sample most affected retained 66.6% of the strength of an unsoaked sample.

Temperature Test . . . The influence of temperatures that might be encountered in normal use was not significant. A temperature of 110 F actually increased the strength over that at room temperature by 7.8%. The low temperature of 20 F decreased the strength only 1.9%.

Sulphuric Acid Fume Test . . . Exposure to fumes of sulphuric acid for 24 hr had practically no influence on the strength of nylon samples.

Falling Man Test . . . A 212-lb weight attached to the lineman safety strap was caused to drop 6½ ft where the strap was stopped by the steel angle members of a test structure. This procedure was designed to exceed the worst condition which might occur in practice. The maximum tear on nylon straps was ½-in at the buckle hole. Straps of other materials failed completely when subjected to this test.

Test Data for "Best" Lineman Safety Strap

Kind of Test	Test Condition	Results
Tension over 6-in. pulley: With strap and snap fastener	Load to failure	3,090 lb
With strap and buckle fastener	Tear at buckle hole	655 lb
	Failed at	1,060 lb
Abrasion test (30,000 strokes)	Depth abraded	0.0035 in.
Preservative Resistance Tests	Untreated	2,920 lb
	Creosote	2,780 lb
	Strength retained	95.3 %
	Pentachloraphenol	2,885 lb
	Strength retained	98.9 %
Ply Separation Tests	Untreated	97½ lb
	Creosote	65 lb
	Strength retained	66.6 %
	Pentachloraphenol	87½ lb
	Strength retained	89.8 %
Temperature Tests (Riveted samples)	75 F (room temp)	1,530 lb
	20F	1,500 lb
	Cold strength retained	98.1 %
	110 F	1,650 lb
	Hot strength retained	107.8 %
Sulphuric Acid Fume Test	Exposed 24 hr	2,930 lb
	Strength retained	100.3 %

Falling Man Test:
Weight of 212 lb dropped 6½ ft, with strap catching at bottom of V of steel angle braces:

First test resulted in slight tear at first buckle hole.
Second test resulted in ½ in. tear at second buckle hole.

It pays to specify *Kuhlman* standard transformers

As every user of transformers knows, such apparatus equipped with special accessories or special electrical characteristics usually costs a great deal more than standardized units. But Kuhlman Transformers, built to EEI, ASA, and NEMA Standards, save you money and can be delivered faster because they are made according to a standardized design and equipped with standard parts that reduce engineering and production time.

These national standards include KVA ratings, dimensions and locations of standard accessory equipment, sizes and locations of terminals, nameplate data, connection diagrams and dimensions for standard auxiliary devices. Today Kuhlman Transformers not only meet these standards, but provide extra factors of efficiency, safety and reliability.

Kuhlman Transformers are soundly engineered and sturdily constructed for years of exceptional service. Kuhlman makes Power, Distribution, Dry Type, Saf-T-Kuhl, Subway, Series, and CSP in standard ratings for virtually every electrical application. Write us today for complete information.

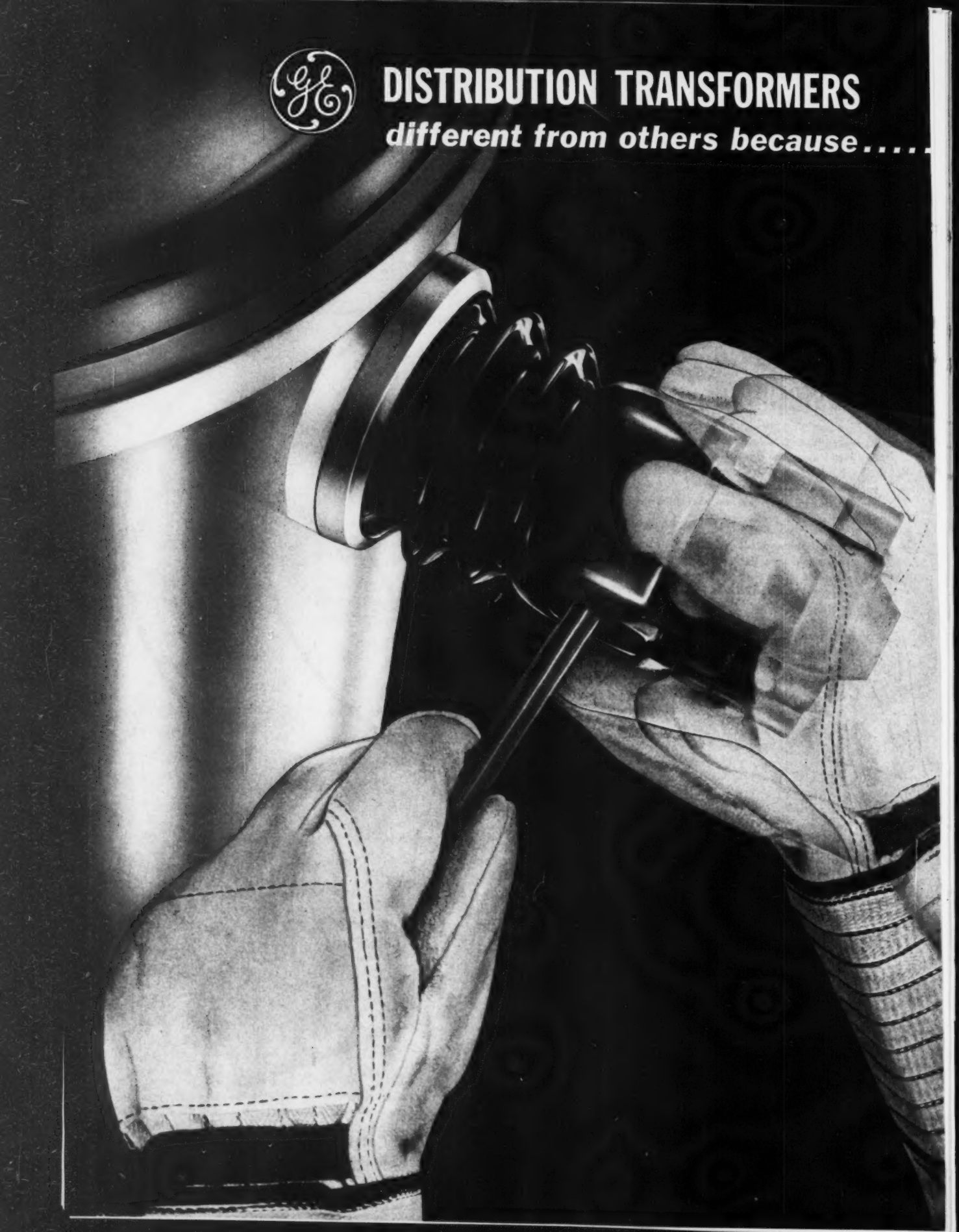
Typical power transformer per ASA Standards. | Typical overhead distribution transformer per EEI-NEMA Standards. | Typical subway type transformer per EEI-NEMA Standards.

Kuhlman

ELECTRIC COMPANY, BAY CITY, MICHIGAN
CRYSTAL SPRINGS, MISSISSIPPI

KUHLMAN K E ELECTRIC

EXPORT REPRESENTATIVE: *International Standard Electric Corporation*
50 Church Street, New York 7, N. Y. Cable Address: Microphone, New York


DISTRIBUTION TRANSFORMERS
different from others because.....

...Insulated clamp-type connectors *on tank-wall hv bushings...permit safer, faster connections...without tools*

Insulated clamp-type connectors on General Electric distribution transformers eliminate exposed live parts . . . permit installation of cable from either side . . . faster connections *without* tools. This plus feature is standard on all G-E Spirakore* distribution transformers 5 kv and below.

HIGH-VOLTAGE BUSHINGS of wet-process porcelain are mounted directly on tank wall using one-piece *stainless steel* clamping band. A twist of the wrist is all that's needed to clamp cable securely. Insulated cap is "spin-free"—will not drop off when unscrewed.

REMEMBER... all transformers are not alike . . . compare the General Electric plus features in the chart below and see for yourself.

For more information on distribution transformers, either unit-type or conventional, contact your nearest G-E sales office, agent or distributor, or write to General Electric Company, Section 431-8, Schenectady 5, New York.

*Registered trade-mark of General Electric Co.

You can put your confidence in—

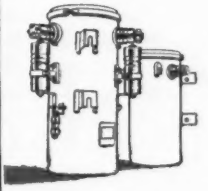
GENERAL ELECTRIC

ALL TRANSFORMERS ARE NOT ALIKE

(make this simple comparison and see)

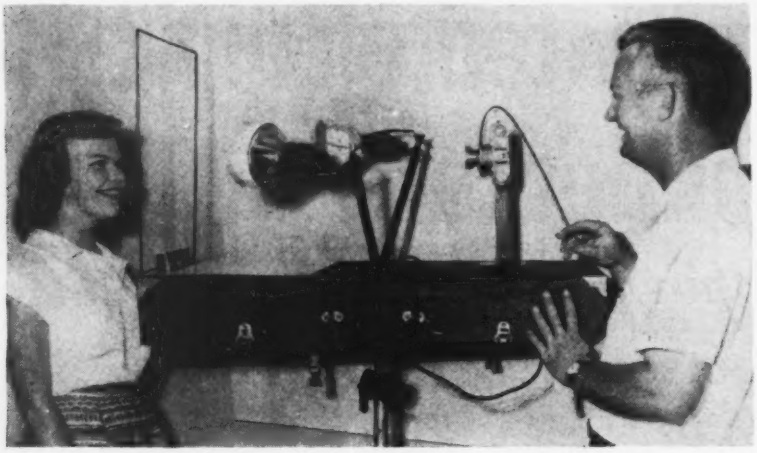
FEATURE	General Electric	Mfr. A	Mfr. B	Mfr. C	Mfr. D	Mfr. E
Production-line impulse testing	YES	NO	NO	NO	NO	NO
Nitrile rubber gaskets at all tank openings	YES	NO	NO	NO	NO	NO
Strenicor pressure terminal clamps	YES	NO	NO	NO	NO	NO
Insulated clamp-type connectors on tank wall hv bushings	YES	YES	YES	NO	YES	YES
One-piece cover band	YES	NO	NO	NO	NO	YES
Terminals designed for both copper and aluminum conductors	YES	NO	NO	NO	NO	NO
Gapped valve-type arresters	YES	NO	NO	NO	NO	NO
Nationwide company-operated service facilities	YES	YES	NO	NO	NO	YES

1878 75 1953 YEARS OF ELECTRICAL PROGRESS



UNIT-TYPE CONVENTIONAL

"Take your choice G. E. makes both"



This Portable Unit Photographs . . .

. . . and Fingerprints New Employees

A tired back and an alert mind combined to produce a lightweight identification card unit for Arizona Public Service Co at Pheonix.

The new rig was designed and built by W. S. McFarland, Public Service safety engineer, and weighs only 60 lb. It's portable enough to put into an automobile or company airplane and is a far cry from the former commercial unit which took two men and a pickup truck to move. It looks like a suitcase, is self-contained, and breaks down so that every part, including the case, is part of the final functional assembly. Top of the case contains fingerprinting material and becomes a table top when set over the backs of two chairs if desk facilities are not available.

Lower portion of the case contains the rest of the gear—rack and pinion standard, two 150-w floodlights and diffusers, camera, identification, numbers, and focusing frame. It is fitted onto the standard which can be raised and lowered with the gear to compensate for various heights. Camera and lights fit into slots and are screwed tight. A portrait lens is used and identification pictures are shot at a distance of 25 in.

Union Shop Out . . .

. . . Calectric Pres Albert Cage tells his employees if a new contract is to be signed

In a new "right to work crusade," Albert Cage, president of California Electric Power Co, told employees that the company would not agree to a union shop clause in its new contract with the International Brotherhood of Electrical Workers, American Federation of Labor.

Speaking to the company's northern division employees at Bishop and southern division employees in Riverside, Cage charged Local 47 with abuses of the union shop clause which had prescribed membership for certain employees regardless of their wishes.

Compulsory Union Membership Opposed . . . "We do not object to organized labor as such, nor do we object to Local 47 representing production employees," Cage asserted, "but we do object to compulsory union membership."

Both Cage and J. A. Talley, Calectric assistant comptroller and chairman of its labor relations committee, said the union has been notified that the existing contract will not be renewed. The original contract became effective Dec. 1, 1946 and has been amended annually.

The Calectric president cited two of the principal abuses of the union shop provision during the period of the March strike. One, he said, was the "unjustified strike" itself. The other, he said, was that "the union's own members, who were the company's employees, were mistreated or abused." He said the union attempted to take disciplinary action against employees who had not paid dues during the strike although a union director had publicly told members to disregard dues during that period.

Local 47 struck both Southern California Edison Co and Calectric last March 10, then called off the Calectric strike without explanation 23 days later, on April 2. No settlement had been reached on wage differences, and no negotiations had been held.

Cage said he expected strong union opposition to the new contract proposal but had no fear of a strike threat.

FRAZIER THOMAS, emcee of "Petticoat Party" television show, is amazed by the difference between the coal stoves and modern electric ranges. Demonstrating are Jane Foster, home economics director for Commonwealth Edison, and Mrs. Lillian Curtis, staff lecturer

TV Gives Sales Program Color

'Petticoat Party' show sparks Commonwealth Edison promotion aiming to sell 25,000 electric ranges in year

"Today Is The Day Of The Electric Range." That is the slogan Commonwealth Edison Co is using on its new television show, "Petticoat Party".

The TV show is only part of an all-out campaign designed to triple range sales during the coming year. The goal is 25,000 sales.

In addition to a host, there are also vocalists and an organist. But the real feature is audience participation—with prizes. And, of course, the theme always comes back to electric cooking with one of Commonwealth Edison's home service girls handling this part of the story.

The 30-minute program shows five times a week. Other parts of the promotion include:

- 87,000 lines of advertising in the daily newspapers, 20,000 of it in color.
- Neighborhood newspaper advertising.
- Outdoor billboard advertising.
- A $4,000 range window and floor display contest running through to Oct. 21.

Display Context . . . All appliance dealers in Chicago, except large department stores and Commonwealth Edison stores or any dealer who retains a permanent window trimming staff are eligible for the display contest. Prizes range from a $1,000 grand prize to an eighth prize of $150. Prize money will go: 50% to the dealer; 25% to the distributor representatives; and 25% to the Commonwealth Edison dealer advisor.

Cooking Demonstrations . . . Two cooking demonstration programs will be taken to women's groups of 100 or more throughout the company's territory. Themes will be "Fancy Cookery" and "The Cook's In the Parlor."

The company has set up a promotion fund of $45 per range, $10 for distributor range promotion, and $35 to apply against installation costs. Ranges will be advertised at an "installed" price with a $25 or more trade-in allowance made for old stoves turned in.

WWP Plans Sales

First promotion program in decade slated due to better power supply

Because better supplies are expected over the next few years, the Washington Water Power Co of Spokane is undertaking its first sales promotion program in 10 years.

The program was announced by Pres Kinsey M. Robinson in a letter to shareholders. He said:

"Due to the better power supply conditions expected over the next few years, the company has reorganized its sales promotion program and for the first time in several years expects to carry on an energetic program for the promotion of additional residential, commercial and small industrial business. This program should have the effect of improving both gross and net revenues."

Non-Merchandising Utility . . . WWP does not merchandise, but plans to work closely with dealers in expanding sales. Training of WWP salesmen will be aimed at selling "up to the point of taking the actual order" for new appliances, at which moment the power company salesman must step gracefully aside and allow the dealer to take over. The sales program among homeowners will stress adequate wiring as well as new and replacement appliances.

Motel Plans Largest Heat Pump Installation

The largest single installation of heat pumps on record will be made by the General Electric Co in a luxury motel in Miami Beach, Fla., the company has announced. A multiple installation of 49 "Weathertrons" will provide all-electric year-round air conditioning in the Belmont Park Motel now under construction in Miami Beach. Described as one of the largest and most beautiful of its type, the luxury motel will consist of 22 one-story buildings each of which will contain 10 living units all completely air conditioned. It will include four administration buildings, two full size swimming pools, a complete restaurant and cocktail lounge.

a Transmission Engineer Asks—

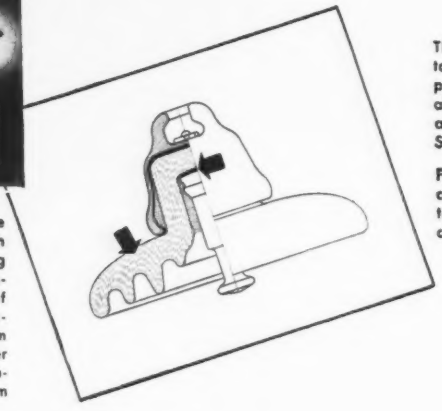
"How do PINCO 1060 suspension units stand up under impact blows encountered in installation and service?"

NO. 11 IN A SERIES

. . . . . here's our Answer:

The ability of Pinco Suspension Insulators to withstand severe impact blows is attributed to the *rugged design of the porcelain body*, wherein the proper distribution of porcelain at critical points plus beaded edges produce a huskier section of sufficient strength to provide *extra* protection from impact blows encountered in installation or service. Additional protection is also provided through the use of a resilient pad between the porcelain and the top end of the pin. The cushioning action of this pad protects the porcelain from damage by impact on the end of the pin and relieves any stress which might occur.

Pinco Insulators of every type are continually subjected to tough laboratory tests approximating all possible conditions encountered in actual service. Typical of these is this routine test for impact strength made on random samples from production. Another example of Pinco's careful watchfulness over every detail, from design to completed product.



This sectional view of a Pinco 1060 Suspension Insulator shows its rugged design characteristics and husky porcelain section. Note location of resilient "shock absorbing" pad between pin and porcelain . . . another protective feature built into every Pinco Suspension Unit.

For complete electrical and mechanical specifications covering the Pinco 1060 Suspension Insulator, refer to page 65, Pinco Catalog No. 49. If you don't have a copy—write us.

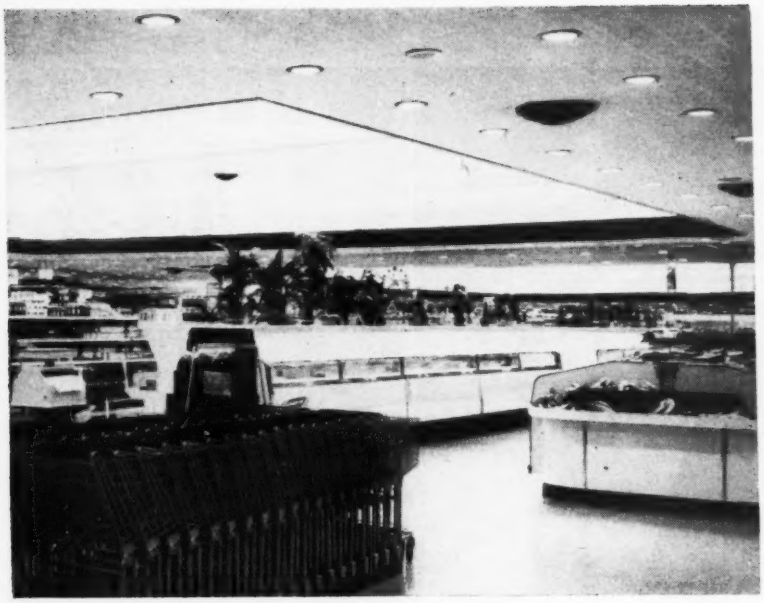
The Porcelain Insulator Corporation LIMA, N. Y.

Sales Agents: JOSLYN MFG. AND SUPPLY CO. *Offices in Principal Cities*

Suspension Insulators . . . Clamps and Fittings . . . Switch and Bus Insulators . . . Distribution and High Voltage Pin Types . . . Guy and Tree Insulators . . . Special Porcelain.

PINCO INSULATORS

RIGHT ON THE JOB



GENERAL view of overhead lighting installation shows how . . .

Incandescents Brighten Missouri Market

ROGER W. RENKEL, Union Electric Co of Missouri

The trend toward incandescent down lighting for general illumination in supermarkets is emphasized in an installation completed this spring at a food chain store located in Ferguson, Mo., a suburb of St. Louis. It consists of 300-w lamps in recessed Pittsburgh reflectors with louvers, on 6 ft 9 in. sq spacing in a 12-ft white acoustical ceiling. The 16-ft high center area has a shielded trough of two continuous rows of DeLuxe cool white fluorescent lamps for decorative effect. Primary downlighting in this area is provided by 500-w lamps. Side wall mirrors create the effect of expansiveness.

Installation was designed by Peter T. Siebke, architect, with assistance from the author.

AMA Predicts Soaring Air Conditioner Sales

Within the next five years, according to the American Institute of Management, New York, more than two million homes in the United States will be fully air conditioned, as compared with only 100,000 today. By 1963, the industry's annual sales—including industrial and commercial installations—will exceed $5 billion.

In an appraisal of the industry, the Institute predicts that sales of year around residential air conditioning systems will total 120,000 in 1954; 240,000 in 1955; 360,000 in 1956; 540,000 in 1957; and 700,000 in 1958.

"Within ten years," the report advises, "the non-air conditioned home will be obsolete, at least in most parts of the country. Year around air conditioning will be standard equipment in practically all new homes and there will also be a very large number of existing residences in which similar equipment will be installed, or cooling units added to the heating plants."

Copies of the report may be obtained from the Institute, whose headquarters are at 125 East 38th Street, New York 16, New York.

REA Estimates 90.8% of U. S. Farms Electrified

Nearly 150,000 farms in the United States were electrified during the fiscal year ending June 30, 1953, bringing the percentage of electrified farms to 90.8, the U. S. Department of Agriculture revealed in a recent report. A year ago the percentage electrified was 88.1.

The estimate, compiled by the Rural Electrification Administration, shows that on June 30 there were 4,888,460 farms connected to lines of all power suppliers, leaving a total of 493,674 still without central station service.

The estimate is based on the number of farms shown in the 1950 census reports.

In addition to the 493,674 farms without service, REA estimates that about half that number of other rural establishments, such as non-farm rural homes, schools and churches, are unelectrified.

Three states passed the 99 per cent mark during the year. Michigan now has 99.9 per cent of farms electrified, Indiana 99.3 per cent and Washington 99.1 per cent.

Altogether, 27 states are above the national average of 90.8 per cent, and 20 states are below.

Arizona's percentage of farms having access to electricity is the same as the national average.

Corning Glass Prepares Lighting Handbook

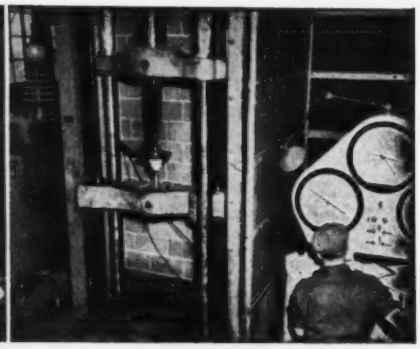
A new 24-page book, "Architects and Engineers Handbook of Lighting Glassware", has just been published by Corning Glass Works, Corning, N. Y.

It is available upon request to all who are interesting in commercial lighting for stores, offices, schools, and public buildings.

The basic types of lighting glassware are completely described and recommendations for the most effective use of them in producing desired levels of illumination and qualities of light with respect to brightness and color are included.

Attention is also given to simplified methods of estimating lighting intensities, which allow a rapid preliminary survey of any installation problem that may arise.

Methods for actual calculation of illumination with large area luminous elements, troffers, fluorescent luminaires and incandescent lens fixtures are outlined, so that the book may be used as a guide in laying out and estimating practically all types of commercial lighting installations.

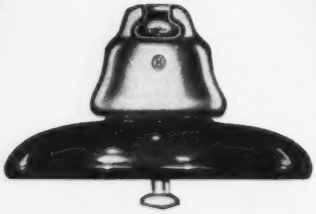


WE SMASH A CARLOAD OF SUSPENSION INSULATORS A MONTH . . . JUST TO BE SURE OF A CURVE!

This may seem strange - - one of the biggest users of O-B suspension insulators (a carload a month on standing order) gets them for nothing and merely smashes 'em up!

Enough suspension units to build some 20 miles of 69-kv line, each month, go to our laboratory for destructive test. Such extensive research makes possible the location of a truly representative number of points on a characteristic curve of normal distribution, and permits scientific statistical analysis of production.

Such costly vigilance pays off by taking guess-work out of a product whose primary virtue is dependability. Because *we* won't guess at the quality of O-B suspension insulators, *you* don't have to.



Ohio Brass

MANSFIELD OHIO, U.S.A.

IN CANADA: CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.

4390-H

GE May Appeal Lamp Verdict

Officials study court ruling that company must share its incandescent patents with other manufacturers

General Electric Co officials last week were considering an appeal to a federal court order handed down Oct. 2 requiring the company to turn over its existing patents on incandescent lamps and their parts to other manufacturers, entirely free of royalties.

In commenting on the decision, Donald L. Millham, GE vice president and general manager of the company's Lamp Division, stated that the court's order went further than previous Supreme Court decisions would allow.

"Certain provisions which are apparently included in the judgment," he said, "such as those dedicating existing patents on incandescent lamps and lamp parts, go further than we believe the court had the power to go under Supreme Court decisions, and further than we think proper under the circumstances.

"This is particularly so," he added, "since all of GE's incandescent lamp license agreements with other domestic lamp manufacturers, which constituted perhaps the most important issue in the case, were terminated in 1945."

Alterations Made . . . Millham pointed out that GE had altered many of the relationships with foreign lamp companies of which the government had complained.

"These and other actions taken by the company since the case was started many years ago," he said, "have accomplished most of the objectives originally sought by the government."

The order, which affects some 200 patents, was part of a judgment upholding a 1949 monopoly conviction of GE and six other lamp supply manufacturers. These were among eight firms Judge Forman convicted four years ago.

The concerns affected, in addition to GE, are: International General Electric Co. Inc., of New York, a GE subsidiary; Consolidated Electric Co of Danvers, Mass.; Hygrade Sylvania Corp of Salem, Mass.; Chicago Miniature Lamp Works of Chicago; N. V. Philips' Gloeilampenfabrieken of Holland; and Tung-Sol Lamp Works of Newark, N. J., now known as Tung-Sol Electric Co.

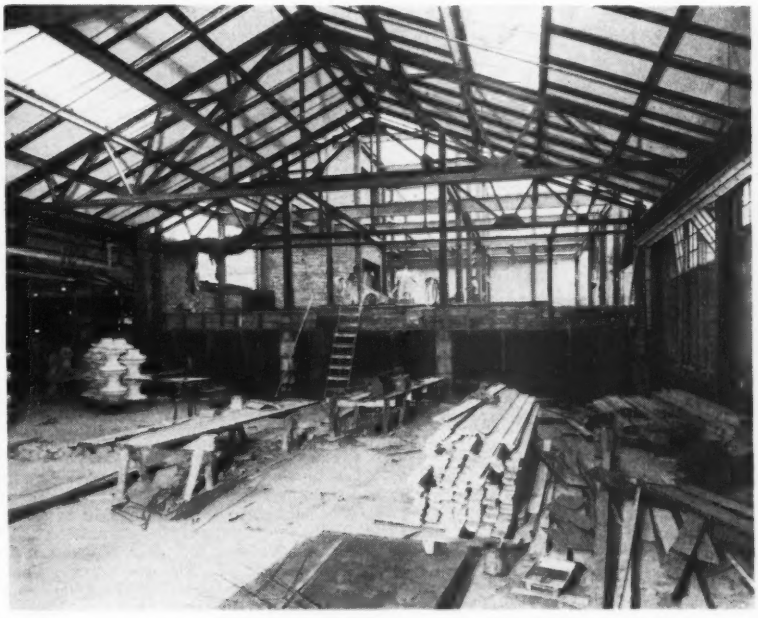
Reasons Listed . . . In his 100-page opinion, Judge Forman said the free licensing of the companies' patents was an "essential remedy" against perpetuation of the monopoly. He stated that the "huge body of patents owned by GE and other defendants could "easily overwhelm and defeat competition by small firms," and added that the small concerns were not financially capable of testing the legality of the patents or of paying royalties on them.

He directed GE to make available to competitors its blueprints for lamp-making machinery and all seven companies to end contracts and agreements with each other in the making of light bulbs.

Some Consolation . . . Judge Forman, however, rejected a U. S. government proposal that would have compelled the company to divest itself of at least half of its facilities for producing light bulbs and parts.

He ruled that to divest GE of such physical equipment would be "neither feasible nor in the public interest."

The two companies not directly affected by the decision are Westinghouse Electric Corp and Corning Glass Works, which had previously entered into consent judgments under which they accepted restraints on their business.



Victor Increases Plant Facilities

With the construction of 12,500 sq ft of additional manufacturing and storage space, Victor Insulators, Inc, Victor, N. Y., has completed another phase of its plant expansion and modernization. The new building provides added facilities for switch and bus insulator manufacture and storage capacity for 20 additional carloads of raw material. The fireproof structure is a combination of steel girder and reinforced concrete construction and includes a new 6,000-lb elevator to facilitate transport of raw and finished materials from one floor to another.

Detroit Body Rejects All Generator Bids

The Public Lighting Commission of Detroit has thrown out all bids on the 50,000-kw turbo-generator needed for the Mistersky Station. New bids will be asked.

The low bid of Brown Boveri Co earlier had been thrown out on grounds that the company had no previous experience in building the type of generator needed. The PLC's latest action affected the bids submitted by Westinghouse Electric Corp, General Electric Co, and Allis-Chalmers Mfg. Co.

The commission indicated new specifications will require that bidders have "suitable experience" in building generators of the type needed.

Italy Gets Generators

Two Westinghouse 50,000-kw turbine generators and related apparatus, which will add nearly 700 million kwhr to Italy's annual electrical output, have been placed in operation at Piacenza in northern Italy at Societa Edison Co's newly modernized "Emilia" station. The new generators are the first of reheat design ever to be exported by Westinghouse Electric International Co. Normally rated at 62,500 kw, the units are being operated by the utility at 70,000 kw. The installation marks the virtual completion of the Mutual Security Agency's thermal electric power expansion program for Italy.

MANUFACTURING BRIEFS

Aluminum Co of America has closed four of the smelting plant potlines at Alcoa, Tenn., because of the long drought during the summer. The shutdown will idle some 400 employees and the potlines will not be started up again until there is sufficient rainfall to raise the storage level in power dam reservoirs to insure power for operations throughout the winter months.

Allis-Chalmers Manufacturing Co will acquire the assets of the Buda Co, Harvey, Ill., around the end of October, according to an announcement by W. A. Roberts, Allis-Chalmers president. Time for dissenting shareholders of the Buda Co to demand payment for their shares expired at the end of last month. The number of shares dissenting was so small that completion of the transaction pursuant to the plan of reorganization between the companies is assured, subject to various closing requirements of the plan.

Square D Co has opened its new 48,000 sq ft, two-story office building in Milwaukee, Wis. The structure brings to more than 450,000 sq ft the company's total working area in the city, and represents the fifth expansion project in Milwaukee since 1940. While the new building houses office functions exclusively, the transfer of these functions from existing quarters makes available additional space for production and research facilities.

Gunther & Shirley Co, bidding along with E. V. Lane Corp, Palo Alto, Calif., has submitted a low bid of $3,419,357 for installation of equipment and completion of the powerhouse at Chief Joseph Dam on the Columbia River in northcentral Washington. The bid was well below the $4,167,106 estimate made by the U. S. Corps of Engineers.

SALES ASSIGNMENTS

COMPANY STAFFS

Westinghouse Electric Corp has reorganized its Northeastern region to include five sales districts. E. C. Delano has been named manager of the Boston district; E. G. Horton, manager of the Connecticut Valley district, with headquarters in Hartford, Conn.; W. C. Wood, manager of the Newark, N. J. district; H. W. Dralle, manager of the New York City district; and H. B. Vidal, manager of the New York State district, with headquarters in Buffalo.

Electric Controller & Mfg Co, Cleveland, has appointed W. J. Sonnenburg as Detroit district manager, succeeding E. F. Vidro, who had served 40 years in that capacity.

Edward Valves, Inc, East Chicago, Ind., has named H. W. Bierman as sales engineer for the territory comprising the state of Oklahoma and parts of Missouri, Kansas, Arkansas, and Texas.

H. K. Porter Co's Leschen Wire Rope Division has appointed G. N. Dow Chicago district sales manager. The district includes northern Indiana, Iowa, Wisconsin, northern Illinois, Michigan, and Minnesota.

REPRESENTATIVES

Marcus Transformer Co has appointed Norman Bragar Co, Newark, N. J., as sales representatives for northern New Jersey and including Trenton, N. J.

MEETINGS CALENDAR

National Association of Electrical Distributors
Fall Meeting, Pacific Zone, Hotel del Coronado, Coronado, Calif., Oct. 11-14.

Iowa Utilities Association
Management Conference, Hotel Fort Des Moines, Des Moines, Oct. 12-13.

Edison Electric Institute
Industrial Relations Committee, Fall Round-Table Conference, Sheraton Hotel, Chicago, Oct. 12-14; Meter-Service Committee, William Penn Hotel, Pittsburgh, Oct. 19-21; Electrical Equipment Committee, Jung Hotel, New Orleans, Nov. 2-3.

Electrical Association of Philadelphia
Biennial Electric Progress Show sponsored by Manufacturers' Division, Convention Hall, Philadelphia, Oct. 13-15.

Southeastern Electric Exchange
Accounting Conference, Battery Park Hotel, Asheville, N. C., Oct. 15-16; General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga., Nov. 19-21.

American Standards Association
4th National Standardization Conference and 35th Annual Meeting, Waldorf-Astoria, New York, Oct. 19-21.

University of Texas
Power Distribution Conference, Department of Electrical Engineering, Lower Colorado River Authority Auditorium, Austin, Oct. 19-21.

Public Information Program
Steering Committee, Edgewater Beach Hotel, Chicago, Oct. 21; Workshop Conference, Edgewater Beach Hotel, Chicago, Oct. 22-23.

Oklahoma Utilities Association
Electric Light and Power Division, Eastern District, Vinita, Okla., Oct. 22; Western District, Norman, Okla., Oct. 23.

Pennsylvania Electric Association
Fall Meeting, Meter Committee, Brunswick Hotel, Lancaster, Pa., Oct. 22-23; Fall Meeting, Communications Committee, Hotel Brunswick, Lancaster, Pa., Oct. 29-30; Fall Meeting, Systems Operation Committee, Castleton Hotel, New Castle, Pa., Nov. 5-6.

*__National Association of Suggestion Systems__
11th Annual Convention, Hotel William Penn, Pittsburgh, Oct. 26-27.

American Institute of Electrical Engineers
Fall General Meeting, Muehlebach Hotel, Kansas City, Mo., Nov. 2-6.

National Electrical Manufacturers Association
Annual Meeting, Haddon Hall, Atlantic City, N. J., Nov. 9-12.

Wisconsin Utilities Association
Electric and Gas Section Convention, Schroeder Hotel, Milwaukee, Nov. 11-13.

Pacific Coast Electrical Association
Annual Hawaiian Conference, Honolulu, T. H., Nov. 19-20.

New Jersey Utilities Association
Annual meeting, Seaview Country Club, Absecon, N. J., Nov. 19-20.

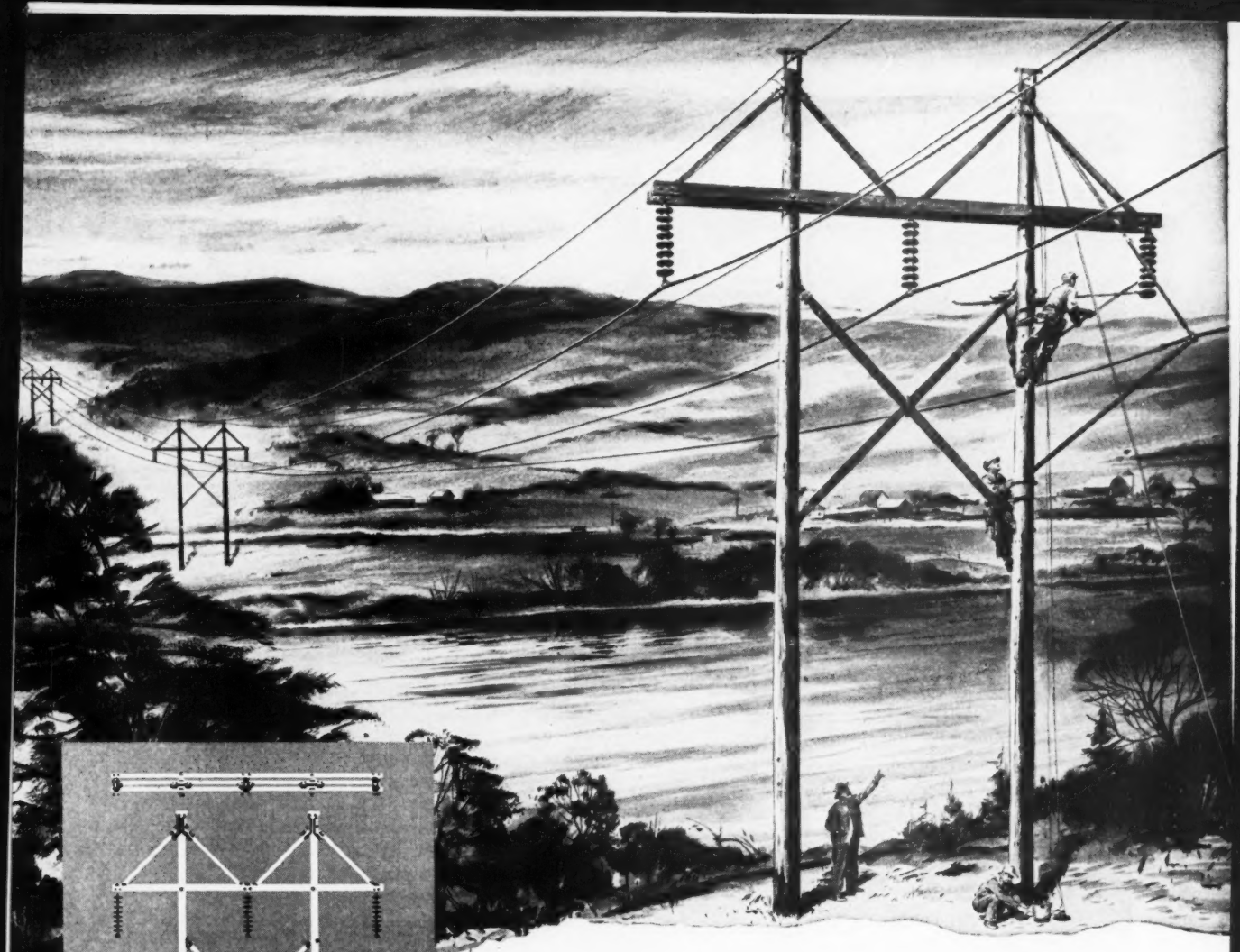
American Society of Mechanical Engineers
Annual Meeting, Statler Hotel, New York, Nov. 29-Dec. 4.

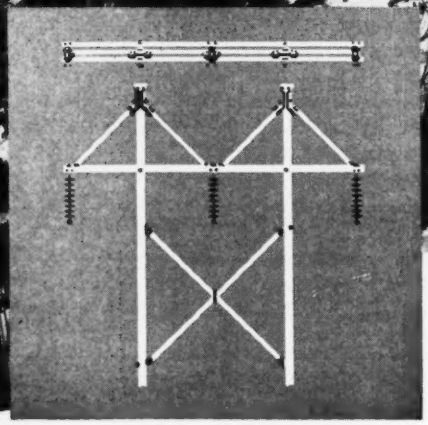
Interstate Power Club
Hotel Martinique, New York, Dec. 7.

Eastern Joint Computer Conference-Exhibition
Sponsored by Institute of Radio Engineers, Association for Computing Machinery, and American Institute of Electrical Engineers, Statler Hotel, Washington, D. C., Dec. 8-10.

Public Utilities Advertising Association
Region Two, Annual Meeting, Skytop, Pa., Dec. 10-11.

*__Addition this week.__





Type No. 702 —
Tangent Structure with braces . . .
for voltages 69 to 154 KV*

LIST OF MATERIAL

Quantity	Description
2	Crossarm
3	Steel spacer w/mounting bolts
2	Stud bolt ⅞" w/washer nuts and locknuts
1	Bent stud bolt ⅞" x 8" w/2 sq. nuts
2	Bent bolt ⅞" x 5½" w/sq. nut
4	Vee Brace 3⅜" x 4⅜" cross section
1 set	Cross brace w/fittings, clamp, ⅞" pole bolts, curved washers
2	Static wire support
4	Machine bolt ¾" w/locknuts
2	Clevis
2	Suspension clamp for static wire
as req'd	Suspension insulators & fittings

**This print was reproduced from the Graybar Bulletin GB-5076A on High Voltage Transmission Line Materials. This 92-page book covers, in condensed form, Graybar materials for line construction. Write us, if you do not already have your free copy.*

How Graybar Methods and Manpower help Standard Construction Practice

You can read in the open country of America the story of our rapid growth in production capacity. New transmission lines, reaching out over plains, mountains and rivers foretell our multiplying strength in building for defense and for better living.

Standard construction practice in transmission line building has given new facility to this basic work. And through its network of 109 offices and warehouses, Graybar contributes substantially to line building speed. Graybar's ability to deliver "packaged" crossarm assemblies for any line structure is a case in point. Fabricated and fitted with hardware to your specifications, the complete crossarm units can be delivered to the job at costs far less than those entailed in separate field handling. And, to complete the "package" Graybar Outside Construction Specialists are always on call to render technical help on out-of-the-ordinary problems. *Graybar Electric Company, Inc. Executive offices: Graybar Building, 420 Lexington Avenue, New York 17, N. Y.* 308-910

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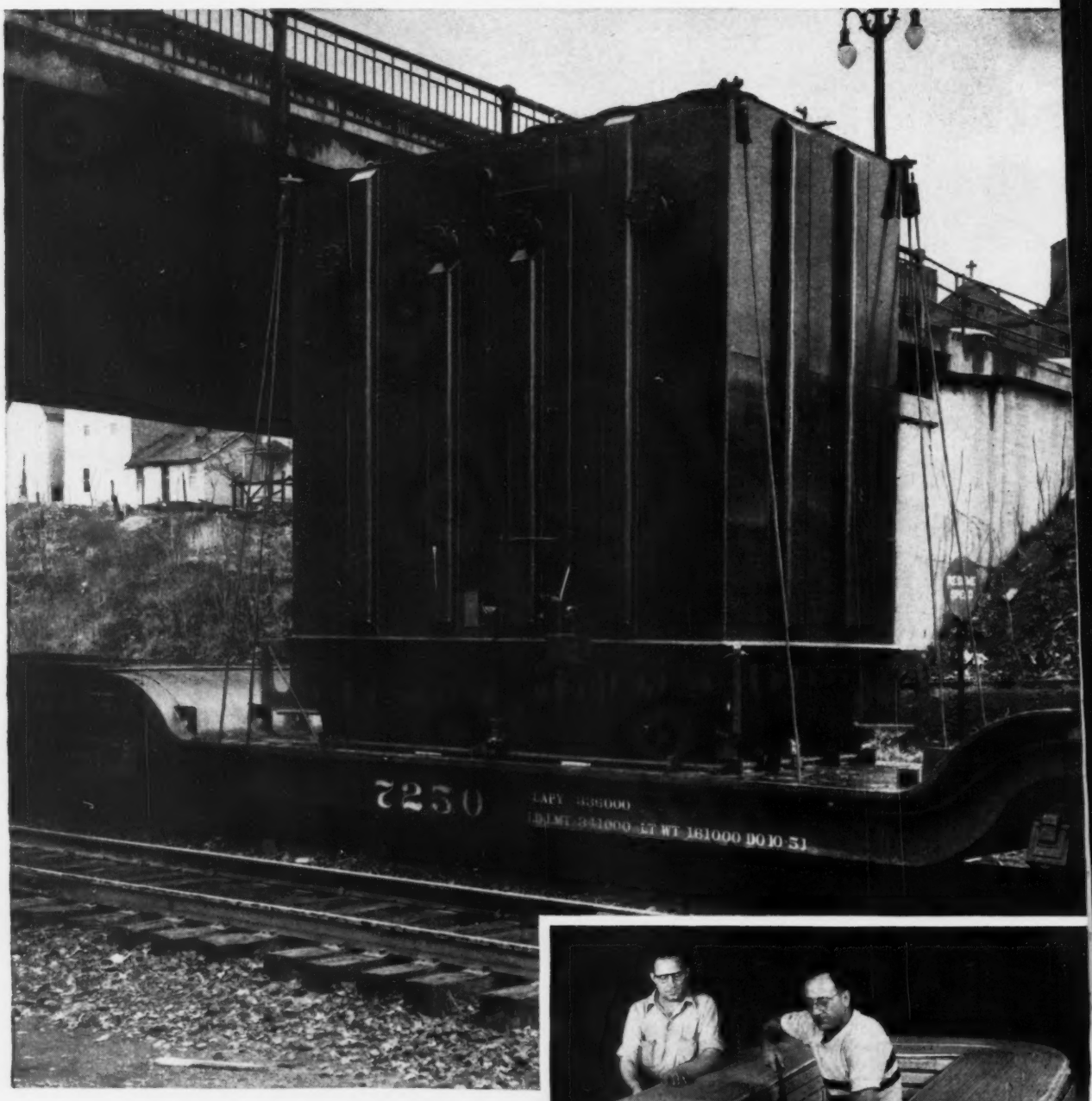
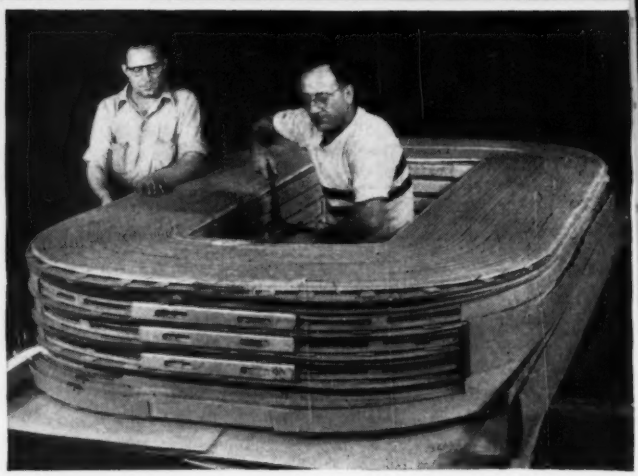
GRAYBAR Everything Electrical

IN OVER 100 PRINCIPAL CITIES



190,000-KVA "FORM-FIT" UNIT enroute to St. Claire Station on Detroit-Edison System . . . the highest capacity unit ever built, but still smaller, physically, than other units on this user's system rated only 145,000 kva!



BETTER SURGE STRENGTH is inherent in "Form-Fit" construction which uses fewer coils of large area. This practice results in greater coil-to-coil and less coil-to-ground capacitance, giving much better surge distribution.

190,000-kva transformer clears low bridge with room to spare!

. . . "Form-Fit" design made it possible

For years, engineers have recognized that shipping facilities were the prime limitation on transformer capacity. Not too long ago, a transformer rated 190,000 kva would have been impossible to transport.

But this record-capacity Westinghouse "Form-Fit" Transformer was shipped in one piece, factory-assembled, from Sharon, Pennsylvania, to Detroit, Michigan. Since no split tank was required, installation was simplified.

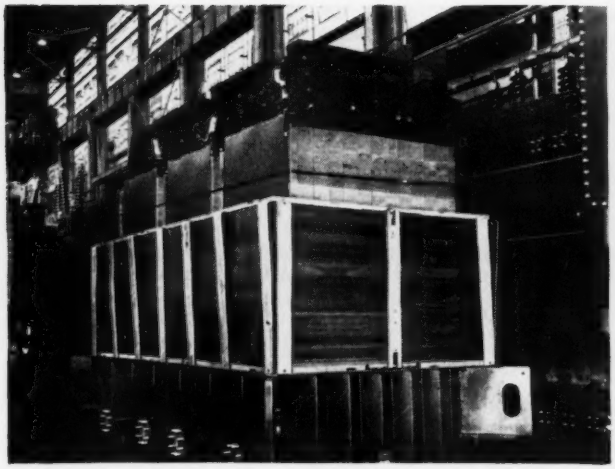
Statistically, "Form-Fit" has cut the over-all size of Westinghouse Power Transformers 20%, reduced occupied ground area 15%. These reductions make possible shipment of even greater single unit capacity in the future with corresponding savings in installation time and expense.

In addition, "Form-Fit" transformers will better absorb the shocks of handling and shipping—the stresses of short circuits and electrical surges—without damage. The core surrounds, supports and protects the coils, giving added mechanical and electrical strength. The tank fits snugly over the laminations—braces the assembly still further.

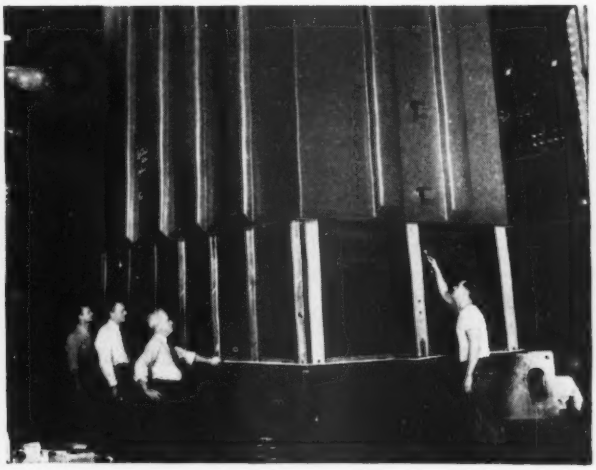
These facts are only part of the story of "dependability at lower cost" offered by Westinghouse Power Transformers. Information on other features like the superior insulation structure, the efficient cooling system, is in the hands of your local Westinghouse representative. He'll be glad to discuss it with you; or write direct for booklet B-4142-A. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-70679

YOU CAN BE SURE... IF IT'S Westinghouse



BETTER MECHANICAL STRENGTH is added to the coil assembly by the Hipersil® laminations, which are clamped by the inside of the tank. Possibility of internal damage from electrical and mechanical forces is greatly reduced.



BETTER THERMAL CHARACTERISTICS are obtained by use of vertical pancake coils. Vertical cooling ducts form natural flues . . . ideal for forced oil cooling without special devices for directing flow.

FPC Should Follow States . . .

. . . in establishing accounting procedures in connection with fast amortization, EEI proposes in memorandum. Advantages cited

In a memorandum of Sept. 28 the Edison Electric Institute has proposed to the Federal Power Commission that it follow in essence the accounting and rate regulating procedures regarding accelerated amortization prescribed by the state public service commissions.

The memorandum stated that:

"In view of (1) existing and effective state regulations prescribing accounting procedures in connection with accelerated amortization, (2) the primary importance to the electric power companies of the rate-making functions of the state agencies, (3) the confusion which would result from conflict in rules, and (4) the propriety under the commission's own Uniform System of Accounts of the accounting treatment already prescribed by state regulatory authorities, it was further urged that no conflicting federal rule either for accounting or for rate-making purposes should be promulgated by this commission."

Many Objections . . . In spite of the many objections which have been advanced, the FPC, according to this memorandum, now proposes that:

"It has informed these companies only that the accounting rule proposed by the commission is the rule recommended for adoption by the Committee on Accounts and Statistics of the National Association of Railroad and Utilities Commissioners under date of April 21, 1953."

The proposed rule would require the charging of the tax "reduction" during the period of accelerated amortization to:

"A new **below-the-line** income account, Account 539, Provision for Future Income Taxes Resulting from Accelerated Amortization, and credit such amount to a new balance sheet account, Account 259, Reserve for Future Income Taxes Resulting from Accelerated Amortization. After the expiration of the period of accelerated amortization, Account 539 would be credited each year with an amount equal to the amount accumulated in Account 259 divided by the average estimated remaining service life of the emergency facilities."

The memorandum, after strenuously objecting to this proposal, went on to say:

"In express recognition of the fact that **the effect of accelerated amortization is not to create additional income or a tax saving,** state regulatory authorities throughout the country have spoken almost as one in favor of an accounting procedure which would normalize the tax effect of accelerated amortization. Although the objective of these state commissions has been the establishment of an accounting procedure which would reflect the fact that accelerated amortization does not create additional income or a tax saving, varying procedures have been selected to achieve the desired 'normalization'.

"Clearly the accounting procedure recommended by the NARUC's Committee on Accounts and Statistics, under which net income, **but not operating income,** would be normalized, is not a reconciliation of these varying 'normalization' procedures."

Intent of Congress . . . The memorandum, after mentioning the intent of Congress in granting the privileges of accelerated amortization to all segments of industries, whether regulated or not, went on to mention the statement of Chairman Robert L. Doughton of the House Ways and Means Committee who said in 1940:

"This bill deals with **American corporate business engaged in every form of enterprise known to man—with corporations of all types and sizes,** from the colossal corporate giants with their multitude of interlocking and associated companies to the small single corporation. It covers the most widespread and the most concentrated—the enterprises of a single endeavor and those engaged in manifold activities. (Congressional Record, House, August 29, 1940, pp. 17,074-5)."

The memorandum points out that the opponents of "normalization" wish to deny the utilities any benefits from accelerated amortization. This is made clear by the following excerpt on page 12:

"Thus, when in the course of his argument the commission's staff counsel was asked whether under the treatment which he proposed, there would be 'any advantage to any utility in accepting one of these rapid amortization certificates,' he frankly stated (Record of Oral Argument, page 28):

"Mr. Walsh: I don't think there **should** be any benefit." And (id.):

"Commissioner Smith: 'That was not my question. My question is: 'Under the method of treatment which you propose, would there under any circumstances be any gain or benefit, or whatever the other word was that you used, to a utility as a result of accepting one of these rapid amortization certificates? I take it the answer is no'.

"Mr. Walsh: 'There would be no benefit to the utility'."

The memorandum makes the conclusion that:

"Unless Congressional intent and administrative determinations of another federal agency are to be disregarded, electric utility companies must be allowed the intended use of the funds originating from the tax deferment. Federal accounting procedure should not be such as to lend itself to unsound rate-making practices. Accordingly, if a federal accounting procedure is to rationally reflect rate-making considerations, it must permit the 'normalization' of operating income so that the deferred portion of taxes may remain an operating revenue deduction and not be mandatorily classified as an appropriation of net income."

The memorandum makes its final recommendation by saying:

"We respectfully submit that the accounting procedure proposed in the commission's Notice of Proposed Rule Making does not rationally reflect the rate-making treatment which has been and must be accorded to accelerated amortization, and it would, if adopted,

result in conflict and confusion. In its stead, we strongly urge that this commission either interpret or amend its Uniform System of Accounts so as to allow an electric company subject to its jurisdiction to follow, for federal accounting purposes, the accounting procedure prescribed by its state commission for the treatment of accelerated amortization."

The FPC will begin hearings on this matter on Oct. 16 in Washington.

FINANCIAL BRIEFS

Merger of Scranton Electric Co into Pennsylvania Power & Light Co has been approved by the stockholders of both utilities. Date of the actual merger continues to remain indefinite as approval must be granted by the Pennsylvania Public Utilities Commission, Department of State of Pennsylvania, and the Federal Power Commission before the merger can be made effective.

Iowa Electric Light & Power Co and Iowa Electric Co have won dismissal of the suit of Karl Kaufmann, a stockholder, to enjoin the merger of the two companies. Kaufmann accepted $45,536.35 for his preferred stock and unpaid dividends in Iowa Electric Co in final action closing the suit. Under the Iowa Law, a stockholder objecting to a merger can obtain the fair value of his shares of stock rather than have them converted to stock in the merged company.

Narragansett Electric Co plans to sell $5 million in common stock and $7.5 million in preferred stock . . . **Cleveland Electric Illuminating Co** plans to offer 10,000 shares of $4.50 series preferred stock and 50,000 shares of common stock to employees under the "Employees Thrift Plan" . . . **Tampa Electric Co** has sold privately $8 million 3.7% first mortgage bonds due in 1983.

Galion, Ohio, citizens will vote Nov. 3 on whether the municipal light plant should issue $2.5 million first mortgage bonds.

Reis & Chandler, Inc, has estimated that electric companies in the third quarter of 1953 raised publicly for new money $322 million as compared with $225 million a year ago.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stock			Common Stock		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1953									
Oct. 1	**3.26**	**3.30**	**3.51**	**4.30**	**4.48**	**4.79**	**5.31**	**5.86**	**5.91**
Sept. 24	3.30	3.33	3.54	4.35	4.52	4.83	5.36	5.97	6.01
END OF QTR									
3rd 1953	3.30	3.33	3.54	4.35	4.52	4.83	5.36	5.97	6.01
2nd 1953	3.34	3.46	3.64	4.47	4.70	4.88	5.52	5.93	6.10
1st 1952	3.15	3.23	3.39	4.16	4.41	4.66	4.95	5.24	5.50
4th 1952	2.99	3.03	3.14	4.06	4.22	4.59	4.98	5.33	5.62

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months	Ended	Net Income 1953	Net Income 1952	Earnings Per Common Share 1953	Earnings Per Common Share 1952
Arizona Public Service	12	Aug.	$3,574,000	$2,971,000	$....	$....
Consolidated Gas, Electric Light & Power	8	Aug.	7,458,490	6,633,805	1.32(a)	1.19(a)
Dallas Power & Light	12	Aug.	4,973,363	3,807,461	....	....
Gulf States Utilities	12	Aug.	8,447,780	6,805,239	1.64(b)	1.40(b)
Middle South Utilities, consolidated	12	Aug.	14,779,098	12,845,982	2.17(c)	2.04(c)
Niagara Mohawk Power, consolidated	7	July	16,473,850	14,497,629	1.28(e)	1.21(e)
Potomac Electric Power	12	June	6,119,715	6,067,053	1.34(f)	1.32(f)
Public Service Co of Indiana	12	Aug.	11,348,406	9,659,297	2.30(g)	2.40(g)
Texas Electric Service	12	Aug.	8,813,354	7,881,479	....	....
Texas Power & Light	12	Aug.	8,822,948	7,081,371	....	....

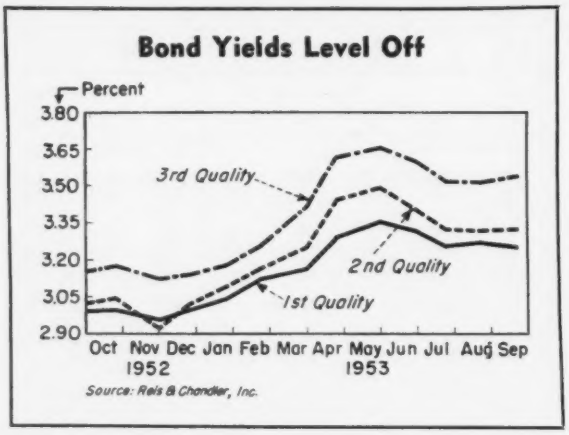
Notes—(a) Based on average shares outstanding; (b) Based on 4,221,832 shares in 1953 and 3,905,210 shares in 1952; (c) Based on 6,808,333 shares in 1953 and 6,300,000 shares in 1952 and including net tax reduction due to Amortization of Emergency Facilities; (e) Based on 11,556,036 shares in 1953 and 10,556,036 shares in 1952; (f) Based on 4,264,200 shares; and (g) Based on 4,253,069 shares in 1953 and 3,691,859 shares in 1952.

FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
WEEK OF OCTOBER 1-7			
Bonds			
Mountain States Power—1st mtg 4% due 1983	$8,000	101.58%	3.91%
Mississippi Power—1st mtg 3¾% due 1983	4,000	101.265	3.68
Common Stock			
New England Gas & Electric—200,096 sh (being offered commonholders on 1-for-10 basis, record Sept. 29 to expire Oct. 16)	$2,751	$13.75	7.27%
Iowa Electric Light & Power—230,000 sh	4,341	18.875	6.36
Western Massachusetts Companies—122,316 sh (being offered commonholders on 1-for-8 basis record Oct. 5 to expire Oct. 21)	3,621	29.60	6.76
SCHEDULE FOR OCTOBER—NOVEMBER			**Bid Date**
Bonds			
Kansas Gas & Electric—1st mtg due 1983	$10,000	.....	Oct. 14
Rockland L&P—1st mtg due 1983	8,000	.....	Oct. 14
Los Angeles Department of W&P—revenue bonds	20,100	.....	Oct. 14
Public Service Electric & Gas—1st mtg due 1983	30,000	.....	Oct. 27
Niagara Mohawk Power—gen mtg due 1983	40,000	.....	Oct. 28
Preferred Stock			
Duquesne Light—100,000 sh $50 par	$5,000	.....	.....
Indiana & Michigan Electric—70,000 sh	7,000(b)	.....	.....
Worcester County Electric—75,000 sh $100 par	7,500	.....	Nov. 17
Kansas Gas & Electric—50,000 sh $100 par	5,000(a)	.....	.....
Common Stock			
Hartford Electric Light—105,500 sh (to be offered commonholders on 1-for 8 basis, record Oct. 23)	.....	.....	.....
Public Service E&G—800,000 sh	.....	.....	Oct. 20
Rockland L&P—210,721 sh (to be offered on a 1-for-7 basis, record Oct. 7 to expire Oct. 21, with an oversubscription privilege)	.....	.....	.....
Long Island Lighting—685,648 sh (to be offered commonholders on 1-for-7 basis, record Oct. 14 to expire Oct. 29) (c)	.....	.....	.....
Florida Power Corp—211,416 sh (to be offered on 1-for-10 basis to commonholders of record Oct. 8 to expire Oct. 26)	.....	.....	.....
Central Illinois Light—100,000 sh (to be offered commonholders on a 1-for-9 basis, record Oct. 27 to expire Nov. 13)	.....	.....	.....
Virginia Electric Power—558,946 sh	.....	.....	.....
POSTPONED, UNSCHEDULED, AND/OR UNDER CONSIDERATION			
Common Stock			
Iowa-Illinois Electric & Gas	$6,000(f)	.....	.....
Southwestern Public Service—(to be offered on about a 1-for-13 basis)	.....	.....	.....
Delaware Power & Light—232,520 sh (to be offered on a 1-for-7 basis to commonholders, record Nov. 25)	.....	.....	.....

Notes—(a) Company gets FPC to sell the stock privately; (b) First Boston Corp-Union Securities Corp. will sell the stock to institutions; (c) Plus 100,000 shares to be offered employees; (e) Estimated; and (f) To sell enough common stock to yield $6 million.

ELECTRICAL BUSINESS OUTLOOK



Easier Money for Utilities . . .

. . . wishing to borrow is indicated by predicted fall in interest rates and less demand by others

The squeeze on borrowers has just about reached its peak. It should be easier to get money for utilities from now on and to get it at less cost. Bond yields have been fairly steady for some months (chart)—as was expected (EBO, May 11). Now there is a good chance that they will start down in the near future although there may be some slight autumn seasonal rise. And it's likely that yields will go much lower within the next year.

Interest rates are expected to fall because of a reversal in the same forces that made them rise last winter and spring. One of these is the demand for new money. It was high early in the year, with government borrowing heavy. While it's still high at the moment for seasonal reasons, it's not so high as many people expected; and it's likely to ease off soon.

Less Federal Borrowing Ahead . . . The federal government will need much less borrowed money in the next few months. It borrowed large sums earlier in the year to finance its deficit. But between now and June most borrowing will be merely "turning over" old issues as they mature.

This refunding does affect the money markets, but it's not the same thing as borrowing new money. That's particularly true now that the Treasury has apparently postponed its great plans for changing the heavily short term federal debt into more long term issues. Recently, it has only tried to extend maturities for a relatively short period—up to five years.

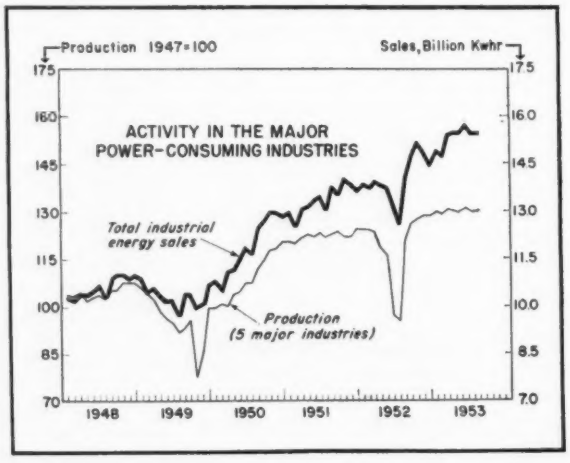
Private demand for money is also expected to drop. There is less need for mortgage money with housing starts continuing to slip downward. Business borrowing to carry inventories is also expected to decline. Business has already built them to high levels (EBO, April 27). Now a lot of companies are trying hard to cut their stocks. One type of borrowing—by municipalities—is likely to rise in the next few months. And electrical utilities will continue to borrow heavily. But demand for new money will be lower than it has been for the past year when borrowing was at a record high.

Public Policy on Money Important . . . In the long run the major reason for expecting a drop in interest rates lies in the government reaction to the business outlook. There are plenty of signs that business is in for a period of lower activity (EBO, Sept. 14). If that is true, the government is sure to attempt to ease money to prevent a serious recession.

Last winter the Treasury and Federal Reserve tightened money and raised interest rates deliberately. The move was widely criticized; so last June the "Fed" eased things somewhat by lowering member bank reserve requirements. Since then it has also taken some other relatively minor steps to make money cheaper. And the Treasury has also stopped pushing interest rates upward.

So far this deliberate easing of money has not gone far enough to make much difference in costs for most borrowers although yields of some bonds are down a little from their peaks. But there is already some talk of further action by the Federal Reserve to ease borrowing. It might amount to another cut in bank reserve requirements, more support for the government bond market, or a cut in rediscount rates.

There are two reasons for expecting government action to cut interest rates if the signs of business slow-down keep on multiplying. One is that the Republican Administration is unusually sensitive to the possibility of a recession. The other is that this Administration believes strongly in the power of money to change the course of business. Where the Democrats would emphasize public works and other big government programs to offset a decline in business, the present Administration emphasizes tax cuts and lower interest rates.



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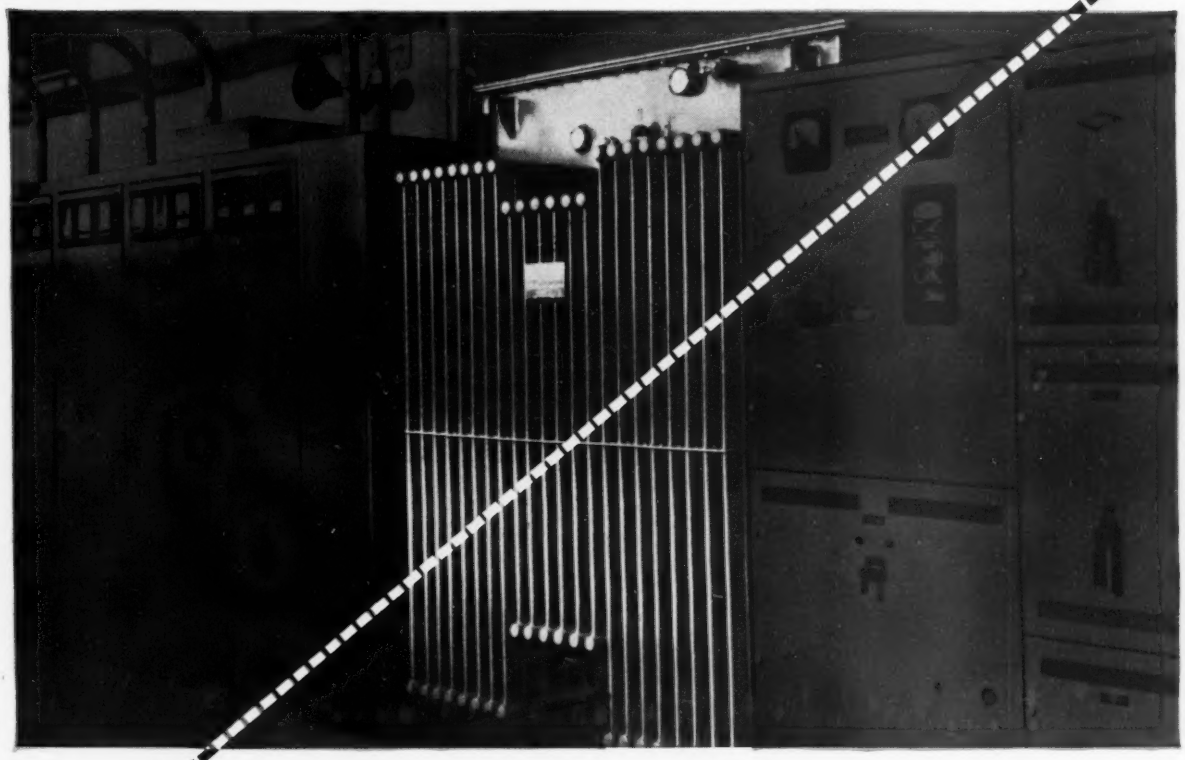

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